

**IMPACT OF A TRANSITIONAL ASSISTANCE PROGRAM FOR VETERANS WITH  
DISABILITIES IN POSTSECONDARY EDUCATION: A PRELIMINARY  
EXAMINATION OF ELEVATE**

by

**Anne E. Barry**

BS, Exercise Science, Grove City College, 2012

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This thesis was presented

by

Anne E. Barry

It was defended on

February 20, 2014

and approved by

Rory Cooper, PhD, Chair and Distinguished Professor, Rehabilitation Science and  
Technology

Mary Goldberg, PhD, Education and Outreach Project Director, Rehabilitation Science and  
Technology

Allen Lewis, PhD, Associate Professor, Rehabilitation Science and Technology

Thesis Advisor: Michelle Sporner, PhD, Assistant Professor, Rehabilitation Science and  
Technology

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The Post-9/11 GI Bill offers today's Veterans the most generous educational benefits in America's history. Of the 23 million living Veterans who have served in the United States armed forces, 12.9% have served since September 2011. Of this number, 73% report plans to utilize their GI Bill benefits. The current spending on educational benefits for Veterans totals over 80 billion dollars. In return, only 10-30% of Veterans are actually completing and attaining a college degree. Sixty-six percent of Post 9/11 Veterans report difficulty in the transition from military to civilian life. There are both internal and external barriers that result in this difficult transition. The most notable of obstacles is the rise in unemployment among Veterans and the increasing number of Veterans returning from service with acquired disabilities. The signature wound of the current conflicts includes resultant injuries of blast explosions. According to the Department of Veterans Affairs, a greater number of Veterans will be documented as having a service connected disability than any other generation of Veterans (VA, 2012).

With the knowledge of transition obstacles, disability prevalence, and educational plans, the current study will look at the impact of a transitional assistance program (ELeVATE, University of Pittsburgh) on Veterans with disabilities in postsecondary education. Perceived self-efficacy, student engagement, academic achievement, and personal development will be the variables of focus. Data were collected via questionnaires and surveys. A total of twelve student

Veterans participated in the study. The study included an intervention group and a no-contact control group who did not participate in the ELeVATE program. Findings revealed no significant statistical difference between the groups in perceived self-efficacy or level of student engagement. Deductive statistics were used to analyze academic achievement as well as personal development via goal orientation and achievement. Case studies present support for continued research and program enhancement. The concluding data support the hypothesis that ELeVATE will have a positive impact on student Veterans with disabilities in postsecondary education in terms of successful transition to both civilian life and to postsecondary education. Finally, the initial examination of ELeVATE highlights the need for further research in this area.

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“We must keep faith with all who have risked life and limb so we might live in freedom and peace...we must reform our veterans’ system to meet the needs of a new war and a new generation... so we can improve the system of care for our wounded warriors and help them build lives of hope and promise and integrity.” - George W. Bush

## **1.0 INTRODUCTION**

September 11<sup>th</sup>, 2001 (9/11), is a day that will forever be burned into the pages of the history of the United States of America. A day in which terror seized the free world and forever changed the landscape of America. Fear and terror were not the only reactions elicited by the terrorist attacks that day. The nation also experienced a surge of patriotism, unification, and self-sacrifice. Since 9/11, there have been 2.6 million American men and women who have voluntarily served in the United States military (DeGroat, 2013). One million of the servicemen and women have experienced multiple deployments, increasing the risk of war injuries and complications (Fraser, 2013). This is approximately 1% of the nation's population who are currently serving in the military and about 6% of the population that make up Veterans- those who have ever served in the military (Cooper, Pasquina, & Drach, 2011). Albeit a small proportion of the nation, they are of the most deserving of respect, loyalty and service in return for their sacrifice. The current faction of military Veterans is unique in their needs and war time experience. The conflict that has ensued in Iraq and Afghanistan marks the longest war-time period in the history of the United States. After 13 years of active military combat, the nation is now looking for a way to repay the war debts to the several million transitioning service members returning to civilian life (Syracuse University, Institute for Veterans and Military Families (IVMF), 2012).

As of 2012, there were 21.23 million military Veterans living in the United States. Approximately 12.9% have served after 2001 (Desilver, 2013). The primary military operations since 2001 have been Operation Iraqi Freedom (OIF; March 2003- September 2010), Operation Enduring Freedom (OEF; October 2001- present) and Operation New Dawn (OND; September 2010 – present). The post-9/11 era Veterans who have fought in the Global War on Terror (GWT), as opposed to the Veterans who served in the Vietnam, Korea and World War II eras, reportedly experience more difficulties in the transition of returning to civilian life, as indicated by Desilver in his research completed with the Pew Research Center study in December, 2013.

In 2012, the Iraq and Afghanistan Veterans of America (IAVA) organization along with Prudential Financial, Inc., conducted a survey of the IAVA's constituents. The results reported that 66% of respondents experience difficulty in the transition from military to civilian life. Two-thirds of the IAVA constituents testified to having health challenges as a result of their military service. The most common complaint in the transition process is that of finding a civilian job (reported by 69% of respondents). Difficulty navigating the Veteran's benefit system was the complaint of 53%, and difficulty figuring out what was next was reported by 50%. Forty-six percent indicated that they needed more education to be vocationally successful, and 44% stated that education is a priority. For many of these transitioning Veterans, they will turn to postsecondary education.

In November of 2013, the Post-9/11 GI Bill accumulated its one millionth beneficiary to enroll in a college or university. The Student Veterans of America reported that 73% of transitioning Veterans plan to use their GI Bill benefits. This generation of Veterans is making use of their educational benefits in unprecedented numbers. Approximately 45.9% of Veterans who have served since 2001 have some college experience or an associate's degree. Another

23.4% have a Bachelor’s degree, leaving only 30.7% without any college or postsecondary education experience. Ironically, as the unemployment rate has grown, the use of the Post-9/11 GI Bill has consistently increased since its passage in 2008 (Mitcham, 2013).

The poignant issue of the increasing unemployment rate among military veterans is of national concern. The IAVA and Prudential study reported findings from the Bureau of Labor and Statistics on the unemployment rate (Table 1) (IAVA, 2012).

Table 1. Unemployment Rate by Year

<i>Year</i>	<i>2008</i>	<i>2009</i>	<i>2010</i>	<i>2011</i>
Iraq and Afghanistan War Veterans	7.3%	10.2%	11.5%	12.1%
Civilians	5.2%	8.6%	9.4%	8.7%

Difficulty in transition from military to civilian life can be attributed to many and various barriers. One must look beyond the surface issue of the concerning unemployment rate to adequately identify the obstacles and determine what is needed to remedy the situation. The discrepancy that exists here is worth looking into and holds the potential for improvement and change. The current return on investment on the \$80 billion GI Bill is very low, amounting to an approximated 10-30% of Veterans who utilize the GI Bill who actually attain a degree. The recent numbers published by the Bureau of Labor and Statistics indicate that the risk of unemployment decreases with higher levels of education. One can expect that transitioning Veterans who engage in training programs and postsecondary degrees reduces their chances of experiencing unemployment.

The current research has uncovered both external and internal barriers that result in the discrepancy between the GI Bill usage and the educational priority to the low achievement,



attainment and retention being experienced by Veterans in postsecondary education today. The most notable barrier is the increasing number of returning Veterans that have acquired a disability. In 2008, the Department of Defense reported that the survival rate of injured servicemen is 85% due to the improved body armor, advancements in modern medicine, and improved evacuation plans. In past conflicts, like Korea and Vietnam, the ratio of injured survivors to injured fatalities was 3:1. Now, more than five times that number of injured servicemen are returning home at a ratio of 16:1 (DiRamio & Spires, 2011). However, with the increased ratio comes the increased number of severe wounds, injuries and illnesses that require attention and proper services. According to the Department of Defense as of January 2014, 51,809 troops have been wounded in action in OIF, OEF, and OND.

Internal and external barriers to transition will be examined and include concepts related to non-traditional students in the classroom, student Veterans as a minority in the classroom, student Veterans and their disabilities, and barriers revolving around the Department of Veterans Affairs benefits system and the logistical underpinnings of the Pos-9/11 GI Bill. It is important to note that disability is viewed from a biopsychosocial model perspective; this view considers a complex interaction of the biological, psychological, and social worlds that together impact function. It would be considered purely an external barrier if the medical model of disability were applied here, as the diagnosis and limitation would be the focus of the incapacity to function relative to the social norm. Additionally, if the social model of disability were applied, it would again be an external barrier based on the assumption that disability is a result of environmental barriers. The biopsychosocial model is a marriage of the two aforementioned models, and it takes into account the relationship between all contributing factors, including the personal and psychological experience of disability (Falvo, 2009).

## **1.1 BARRIERS IN POSTSECONDARY EDUCATION**

### **1.1.1 INTERNAL BARRIERS**

Today's student Veterans face what is known as the "Student-Veteran Triad" (M. Goldberg, personal communication, May, 2013), and that is the compounding experience of being a non-traditional student, a minority in the classroom, and a student (or person) with a disability. This triad includes the internal barriers in postsecondary education for student Veterans that will be discussed. With over one million Veterans using the GI Bill, the number of student Veterans that can be found in the classroom is increasing but still small. According to data from Student Veterans of American, the typical college student is 18-22 years old. Eighty-five percent of student Veterans are older than 24 years (Cate, 2011). Many current publications interested in military affairs and student Veterans have conducted systematic qualitative interviews of student Veterans to assess their transition progress into academia in addition to capturing their personal experiences. Several consistent themes emerged in these interviews that can safely be generalized to the majority of student Veterans.

In a study conducted by Rumman and Hamrick (2010), connecting with peers in the classroom was a primary complaint of most interviewees. Many student Veterans feel as though they are much older, more mature, and have little in common with their college classmates. Student Veterans feel as if their life experiences, their leadership positions, and roles in the military have impacted their lives in such a great way that it makes relating to peers very difficult. For many student Veterans, they have spent several years outside the classroom, some in combat and others in non-combat related military careers. Unlike their non-veteran peers who transition from high school to college with academic skills and norms practiced, student Veterans

are not in the routine of classroom culture (Rumman & Hamrick, 2010). Another common theme that emerged was difficulty relearning study skills and returning to the liberty of schedules. Military members are accustomed to rigid schedules, patterned routines, and strict discipline. The transition to college life with its freedom in course selection, time management, and leisure activities can be overwhelming to student Veterans who are trying to reacquaint themselves to a foreign culture (Ackerman, DiRamio & Mitchell, 2009). Moreover, a Veteran's transition out of the military may be the first time that housing needs will not be provided. For some, finding a place to live, paying rent, paying utilities and keeping a budget is difficult and unfamiliar tasks that add stress to the transition process.

Another prominent theme among interviewees was frustration facing the social stigma attached to the role of "student Veteran." Civilians hold many misconceptions and false beliefs about military experience. Not all Veterans joined the military for the same reason. Not all Veterans experienced the same, or even similar, experiences in the armed forces. And not all student Veterans are willing share or re-live accounts of their military career. Peer relationships and re-initiating prior relationships are difficult when a Veteran must consider with whom they share their experience or to whom they disclose their Veteran status (Rumman & Hamrick, 2010). Self-disclosure is a multifaceted issue, and the act sharing their experience with peers is not the only obstacle. It has been well documented that Veterans will not readily self-identify as a Veteran (Shackelford, 2009). This then results in Veterans not seeking or receiving the services and assistance crucial to successful transition to postsecondary education. Being "macho" – fearless, manly, and brave – are desirable and beneficial in combat related situations. Products of military training quickly learn that one does not identify, discuss, or report a personal problem. Acknowledging a personal problem would lead to assumptions of vulnerability and

negative reactions from superiors (Shackelford, 2009). Student Veterans are not comfortable asking for help, and this barrier needs to be recognized and addressed, particularly by faculty and staff at postsecondary institutions. It is clear that student Veterans have needs that go beyond that of the typical non-traditional college student.

Returning to the Triad, perhaps the most difficult and pervasive issue that face student Veterans in postsecondary education is the reality of a disability. For most, their disability will be an acquired disability sustained during their time at war or in their military career. They must learn to accept their disability, firstly, and then learn how to be a student with a disability. Having a disability in postsecondary education creates the external barrier of the struggle to access and be aware of disability services (these will be discussed in the following section). The Global War on Terror has produced an unprecedented number of wounded and disabled Veterans returning home. Each war results in a signature wound unique to that war theater. The signature wound related to OIF and OEF are blast injuries which can manifest as vision impairment, hearing loss, burns, and/or mobility impairments (including amputations). Six percent of blast injuries result in amputations. Injuries to the spinal cord or brain account for approximately 20% of all injuries.

The two most prominent wounds that are becoming signature for this war era include traumatic brain injuries (TBI) and mental health concerns resultant of combat exposure and multiple tours of duty. The prevalence of TBI for those deployed ranges from 20-30%. Of those who experience a blast explosion, greater than half will develop a TBI. The prevalence of mental health concerns as a result of combat trauma experienced in a war zone is 30%. Of those who have served in the GWT, 70% will obtain mental health treatment (Church, 2009). In 2009, the number of Veterans documented as having Posttraumatic Stress Disorder (PTSD) or major

depression was roughly 20% (Madaus, Miller & Vance, 2009). The Current Population Survey in 2013, reported that among Veterans who served after 2001, 28% testified to having a service-connected disability, as compared to 14% in all Veterans.

#### **1.1.1.1 TRAUMATIC BRAIN INJURY**

The Department of Defense (DoD) reported diagnosing 253,330 service members with mild to severe traumatic brain injury (TBI) from 2000-2012. A traumatic brain injury is defined by the DoD and the Department of Veterans Affairs (VA) as a traumatically induced structural injury and/or physiological disruption of brain function as a result of an external force that is indicated by new onset or worsening of at least one of the following clinical signs, immediately following the event: alteration/loss of consciousness, posttraumatic amnesia, alteration of mental status, neurological deficits, or intercranial abnormalities. The signs and symptoms of a TBI can be vague and extremely variable given the complexity of the brain and the specificity of the injury. In combat, TBIs most commonly result from Improvised Explosive Devices (IEDs), missiles, mortar attacks, or grenades (Church, 2009). TBIs can also develop in non-combat areas of military service and are attributed to falls, vehicular accidents, or a blow or penetration of the skull by a foreign object.

There are two primary types of brain injury – closed head injuries and open (or penetrating) head injuries. Open head injuries involve the skull being penetrated and broken. The damage that occurs from this type of injury is usually localized as only one area of the brain is damaged. However, there is cause for concern due to secondary implications of the wound. These can include blood vessel tears, lacerations, and membrane damage caused by bone fragmentation. Often considered to be more severe, closed head injuries result from a blow to the head or a rapid coup-contre coup motion. The severity risk increases with the brains

susceptibility to incurring injury as it bounces off the interior sides of the skull. Tearing or shearing of blood vessels and nerve fibers can occur. Swelling, hematomas and intracranial hemorrhages are all risks associated with closed head injuries (Falvo, 2009).

The most commonly reported symptom of TBI is cognitive dysfunction. Cognitive dysfunction can include, but is not limited to, difficulty with memory, attention, language, concentration, speed of processing, and executive functioning. Of most notable impact in activities are the deficits experienced in executive functioning. Executive functioning can be defined as the ability to possess self-awareness, partake in goal setting, initiation of activities or tasks, control inhibition and impulse control, planning, self-monitoring, and problem solving. Cognitive problems that include attention, concentration, processing new information, and memory are deficits that will be very apparent in academia. Symptoms of TBI are generally exacerbated during times of fatigue, stimulus overload, or stress. In addition to cognitive deficits and executive function impairments, behavioral and emotional problems can emerge as result of a TBI. Irritability, impatience, mood swings, interpersonal skills, and personality changes are all common symptoms (Church, 2009). The combination of structural damage manifestation and the behavioral implications of the injury will have a profound effect on a Veteran pursuing postsecondary education.

#### **1.1.1.2 POSTTRAUMATIC STRESS DISORDER**

The RAND Corporation (2008) found that 18% of troops exhibit symptom qualification for a diagnosis of an anxiety disorder, depressive disorder, or posttraumatic stress disorder (PTSD). A more recent study reported that roughly one in every 10 veterans will be negatively affected by traumatic events experienced during service (Ready, Vega, Worley, Butt, & Bradley, 2012). Neuropsychological conditions like PTSD can be challenging due to the fact that they are hidden

injuries and the resultant damage is not apparent to the observer. The National Institute of Mental Health defines PTSD as:

an anxiety disorder that some people get after seeing or living through a dangerous event. When in danger, it's natural to feel afraid. This fear triggers many split-second changes in the body to prepare to defend against the danger or to avoid it. This "fight-or-flight" response is a healthy reaction meant to protect a person from harm. But in PTSD, this reaction is changed or damaged. People who have PTSD may feel stressed or frightened even when they're no longer in danger (2013, p. 1).

From 1998 to 2008, the number of returning veterans being treated for PTSD rose from 155,074 to 438,248 (Ready et al., 2012). The current troop withdrawal initiative from both the Afghanistan and Iraq war theaters will certainly add to the number of veterans requiring treatment for PTSD. Posttraumatic stress disorder made its formal debut to the mental health world in 1980, with its addition in to the third edition of the Diagnostic and Statistical Manual of mental health (American Psychiatric Association). The condition was characterized by anxiety attacks, depression, suicidal and homicidal ideations, sleep difficulties, and combat-related nightmares. Prior to this publication however, symptoms of PTSD did not go unnoticed. Symptoms of PTSD were initially recognized as "shell shock" (Foy et al., 1997).

Increased incidence and research on PTSD have refined its definition. The Diagnostic and Statistical Manual of Mental Disorders 5<sup>th</sup> Edition (DSM; 2013) outlines the diagnostic criteria for PTSD which must include symptomatology such as intrusion symptoms (recurrent, involuntary, and intrusive distressing memories of the traumatic event; recurrent, distressing dreams with content related to the traumatic event; experience of flashbacks in which one feels or acts as if the trauma is reoccurring; intense psychological distress and physiological reactions

aroused by cues related to the traumatic event), persistent avoidance of stimuli associated with the traumatic event, negative alterations in mood or cognition (posttraumatic amnesia, exaggeration of negative and irrational beliefs, disorientated cognition, markedly diminished interest or participation in activities and socialization, and inability to experience negative emotion), and marked alternations in reactivity and arousal associated with the traumatic event (irritability, self-destructive behavior, hypervigilance, concentration impairments, and sleep disturbances). Another criterion is the duration of symptom experience. Finally, the experienced disturbances cannot be attributable to another diagnosis or to alcohol or substance induced alternations (American Psychological Association, 2013). Practical definitions of PTSD also include symptoms characterized as survivor guilt, denial, mild cognitive impairment, substance abuse and depression (Cooper, Pasquina, & Drach, 2011).

Military personnel are considered to be the most at-risk population for exposure to traumatic events which could result in symptoms of posttraumatic stress. Of the veteran population, the highest at risk are combat veterans who have served in Operation Enduring Freedom and Operation Iraqi Freedom (Kracen, Mastnak, Loaiza & Matthieu 2013).

As was seen in TBI, problems associated with memory and concentrations are also seen in cases of PTSD and can certainly act as a significant impediment to academic success. Student Veterans who have PTSD may also struggle with appropriate interpersonal exchanges and appropriate responses to social cues, making the challenge to fit in for this non-traditional student much greater. Isolation and avoidant symptoms are common and decrease the likelihood of a student Veteran seeking treatment or accommodations (Glover-Graf, Miller & Freeman, 2010). Moreover, the risk of comorbidity with PTSD is very high. Therefore, a student Veteran



with PTSD is likely to exhibit symptoms of TBI or possess physical or mobility impairments as well (Church, 2009).

### **1.1.2 EXTERNAL BARRIERS**

In addition to the internal and psychological struggles experienced by today's student Veteran, a sea of bureaucratic red tape awaits their return from military service. This is exceptionally true for the 28% returning with service-connected disabilities that are tasked with navigating the complicated Veterans Administration Benefits (VBA) system. This truth also exists for the 73% of returning Veterans who plan on utilizing their GI Bill benefits. The external barriers that will be explained for the student Veterans will include the benefits system, the GI Bill, and campus accommodations and services provided to the student Veteran population.

The majority of returning service members will be eligible for healthcare provided by the Department of Veterans Affairs (VA). During their time in the service, healthcare is under the Department of Defense (DoD). During the transition out of the military, their coverage moves from the DoD to the VA. The average time for OIF/OEF combat veterans to transfer from these agencies is approximately 3.8 months (Randall, 2012). In 2003, in an effort to make the transition more seamless, the VA Secretary at the time instituted an arrangement between VA social workers and Army medical staff to ensure proper and efficient integration to the VA healthcare system. Medical treatment facilities are supplied with Veteran Benefits Administration (VBA) specialists that are on-site to provide the wounded Veterans the information they need to transition to civilian life (Kudler et al., 2011). However, the VBA specialists cannot enroll the Veteran into the benefits system; the Veteran must do that autonomously. This process can now be done online. For the Veterans returning with a

disability, they will have to file a claim with VBA in order to get their disability benefits. As if the aforementioned process of attaining coverage and carrier did not create a barrier in transition, add to that the current backlog that exists in the VA. The Journal of the American Medical Association (2013) reported that despite adding 11,000 VA employees to assist in the claims process, a backlog of more than 1.3 million claims exist. The current average wait for a filed claim is 255 days (Mitka, 2013).

In addition to the stress of healthcare and benefit claims, transitioning Veterans who desire to pursue postsecondary education must learn and understand their educational benefits as prescribed by the GI Bill. Officially titled the Post-9/11 Veterans Educational Assistance Act, the educational benefits legislation for OIF/OEF/OND Veterans was signed into law by President George W. Bush on June 23, 2008. The Post-9/11 GI Bill aims to provide financial assistance for Veterans pursuing postsecondary education by way of financial aid for tuition paid directly to the university as well as stipends paid directly to the Veterans for books, supplies and living expenses (Cate, 2011). Benefits can be applied to undergraduate programs, graduate programs, technical training programs, or vocational training programs.

The Post-9/11 GI Bill was one of the most significant pieces of legislation in terms of educational benefits since the conception of the first GI Bill in 1944. The increased benefits offered to veterans include full tuition and fee coverage for in-state public undergraduate institutions. Out-of-state choices, private institutions and graduate schooling are also available for coverage if an agreement is made by the institution and the VA to match funds to cover the cost of education (O'Herrin, 2011). The educational benefits are based on length of service, with maximum benefits attainable after 36 months of active duty service. The financial aid for tuition cannot exceed the most expensive in-state public institution, and the stipend for books and

supplies totals a maximum of \$1,000 yearly. There is also an additional \$500 if relocation is necessary for pursuit of education. These benefits are available to the Veteran for a time period of 15 years, though they do need to be used in consecutive years. If for any reason, a Veteran is not eligible for full educational financial aid, or the tuition is not 100% covered, several other programs and grants exist such as the Yellow Ribbon Program and the Pell Grant (Grossman, 2009).

Despite the large number of returning Veterans and the proclivity to pursue postsecondary education, academic institutions are not current in best practice of serving student Veterans and student Veterans with disabilities. Very few colleges and universities are adequately prepared to provide assistance and services to their student Veteran population. Only 11% of schools have a dedicated office with coordination of services for student Veterans. Several surveys and studies have identified key variables that will allow a postsecondary institution to operate as a “Veteran-friendly” school. An office of Veteran services should exist and be equipped with a certified benefits specialist that can provide assistance to Veterans navigating the maze of the GI Bill. Secondly, the office of Veteran services should work closely with the disability services office to coordinate care and management of student Veterans with disabilities. As was previously discussed, many student Veterans will not self-identify as a “student with a disability.” Therefore, it becomes crucial that the Veteran service office staff connect these Veterans to the disability service office. And finally, a separate and dedicated space for student Veterans to congregate is reported to be the most popular wish of surveyed student Veterans. More often than not, today’s colleges and universities do not match the standard of best practices (McBain, Kim, Cook & Snead, 2012).

## 1.2 SELF-EFFICACY: THEORIES AND RELEVANT APPLICATION

The military is well known for their adherence to and support of the concept of resiliency. Resiliency has been defined in many ways, but an effective definition is found in *The Warrior Transition Leader* being “the ability to grow and thrive in the face of challenges and bounce back from adversity” (Cooper, Pasquina, & Drach, 2011). Resiliency in the military is an important feature to possess because of the likelihood of exposure to traumatic events. Cooper, Pasquina, and Drach (2011) again describe resilient people as optimistic, self-controlled, and self-aware, possessing mental-agility and feelings of connectedness to others. There are natural connections between resiliency and the concept of self-efficacy for Veterans who pursue postsecondary education. Veterans who adapt to resiliency, adhere to it, and utilize the skill in their academics are at a great advantage.

Self-efficacy is a concept that has a rich history, dating back to the 1970s with an introduction by psychologist, Albert Bandura. Bandura defined self-efficacy as the “beliefs in one’s capabilities to organize and execute the course of action required to produce given attainments” (Dinther, Dochy, & Segers, 2011). Self-efficacy is rooted in the social cognitive theory, which provides a theoretical base for educational psychology. The social cognitive theory perceives function as a transactional relationship between internal personal factors and environmental events. Self-efficacy, within the social cognitive theory, is the ability to respond to life events with purposeful and intentional behaviors to generate actions for a specific purpose (Dinther, Dochy, & Segers, 2011).

For postsecondary student Veterans, self-efficacy is an essential component for positive outcomes (Jenson et al., 2009). Self-efficacy has been identified as the best predictor of college grade point average (GPA) and persistence in education (Sheaa & Bidjerando, 2010).

Persistence is a central component to the definition of self-efficacy. With self-efficacy comes one's belief in the competency of his or her judgment. Those who experience confidence in their decisions, direction, and behaviors are more likely to continue in the direction to reach their goal. Studies have shown a positive relationship between goal setting and success experienced in college to students with high levels of self-efficacy (Jenson et al., 2009). Moreover, Bandura contests that self-efficacy is the most central, pervasive agency that affects life, and the most significant indicator of purpose of life (Klassen, 2002).

It has long been debated in the military whether resiliency is innate in a person or whether it can be taught (Cooper, Pasquina, & Drach, 2011). A study done by Cervone and Peake (1986) looked at the impact of anchoring and adjustment heuristics on self-efficacy and performance judgment to answer a similar question. The intended question is a matter of whether self-efficacy (or resilience) can be taught and practiced. The anchoring and achievement study found that self-efficacy is indeed malleable and can be nurtured and strengthened through intervention. In this case "anchoring" refers to the judgment or the initial value of likelihood a person believes that a certain outcome will occur. High anchors correlate to a belief that one can competently behave in a way to achieve the desired outcome. A low anchor is related to a poor expected outcome and a person's limited capability to affect the outcome. The Cervone and Peake study found that people who were provided with a high anchor judged themselves to be very efficacious, and those with a low anchor judged themselves to be least efficacious. They also found that persistence at a task was also correlated to anchoring. Those with high anchors were most persistent and those with low anchors the least. This study is of great value because it subsumes that self-efficacy can be manipulated and therefore, behaviors can be altered and achievement can be realized.

Bandura explains four key factors that lead to self-efficacy: mastery experiences, vicarious experiences, social persuasion, and psychological reaction. Mastery experiences are the accumulation of past successful experiences and task achievement. With strong mastery experience comes increased confidence, persistence, and resiliency. Mastery experiences also act to regulate the stress response when faced with a daunting task; less stress is experienced when self-efficacy and mastery experience is high. Vicarious experiences refer to the observation of successful task completion by others. It is in this observation that people acquire the confidence and belief that they too can accomplish a similar task. Social persuasion, in Bandura's theory is synonymous with social support and a network of friends and family that are available to offer encouragement. Finally, physiological reaction is a contributing factor to self-efficacy in that stress levels, confidence levels, and psychological reactions all impact one's perceived self-efficacy (Jenson et al., 2009). Student Veterans require self-efficacy in order to use their skills, access support, and engage in learning.

Student engagement is a term that refers to a student's quality of effort and involvement in productive learning activities. In addition to self-efficacy, student engagement has shown to be a relevant indicator for student success and retention. A strong connection exists between achievement and engagement. When students are engaged in learning they actively study a subject and therefore have thorough knowledge of that subject. When students engage in problems solving, class participation, and peer studying, they are more likely to get positive feedback from faculty and staff and gain a deeper understanding of the subject. This process leads to a positive mastery experience, bolstering self-efficacy and increasing engagement in the future. Student engagement can also lead to adeptness in managing complexity, tolerating ambiguity, and working successfully with others from various backgrounds. Personal growth

and increased capacity for continuous learning are natural byproducts of the student engagement theory (Kuh, 2009).

### **1.3 REHABILITATION COUNSELING FOR VETERAN POPULATION**

The OIF/OEF/OND Veteran population is a unique cohort that requires a new way of thinking in order to offer effective services and treatment. Accommodations, policies, and interventional theories that may have been effective in past Veteran groups do not fit the demands of today's Veterans. Traditional means of service and assistance are not effective because of new needs and the complex interaction of physical, mental, and cognitive injuries. New technology, advanced medicine, and greater opportunities are available and should be adequately utilized to service this population. As previously stated, the number of wounded, ill, or injured servicemen and women transitioning to civilian life is unprecedented and is significant when considering appropriate treatment and services in the transition process. The unique mental health and psychological injuries of this war need to be adequately understood by service-providing professionals. The commonly acquired physical disabilities also require understanding in order to provide effective and beneficial services (Frain, Bethel, & Bishop, 2010). The complexity of a Veteran's situation as well as the understanding of his or her acquired disability are comprehended by and fit the training of rehabilitation counselors.

Rehabilitation counselors are educated in the medical aspects of disability, the psychosocial adjustment to disability, as well as service delivery and management. Rehabilitation counseling is uniquely designed to assess a person's individual strengths and to develop and refine attainable goals to lead to a fulfilling and gainful life. Transitioning Veterans

are often in need of disability service acquisition and management as well as guidance in the direction of life after the military. The birth of rehabilitation counseling is found within the military culture as counselors were trained to assist returning soldiers with job placement and job training (Sporner, 2012). This provided service is still essential to the successful transition of today's soldiers. The differences today include the voluntary enlistment as well as the high number of reservists that constitute military personnel. This provides diversity and complexity when civilian job attainment is the goal after service. A rehabilitation counselor is equipped to understand all medical and mental health considerations as well as get Veterans back into the workforce, if work be their goal (Sporner, 2012). Taking a strength-based approach with each Veteran will allow for military skills to transfer easily into civilian life and job skills. In addition to job training, identifying accommodations to ease the transition back into the civilian world is another skill possessed by rehabilitation counselors.

In 2010, Frain, Bethel, and Bishop prescribed a five-pronged approach for rehabilitation counselors to use in the provision of services to military Veterans with disabilities. The recommendation to improve service delivery includes: (1) infusing Veterans' issues into rehabilitation training; (2) focusing on distinct employment needs for veterans; (3) using self-management techniques to prevent and manage secondary disabilities; (4) using a holistic resiliency model to address the needs of both the Veteran and their family; and (5) addressing rehabilitation researchers with an imperative to study Veteran issues.

Textbooks today for rehabilitation counselors, more often than not, fail to identify Veteran specific issues in the rehabilitation process of acute disability care. If this population is mentioned, great details of available services of considerations for care are not espoused. This shortage of information is in part due to the lack of need in the past 40 years. However, this need



has changed ever since the United States' involvement in Iraq and Afghanistan. The need for education of Veteran issues in the rehabilitation field perhaps has never been greater. Given the extended length of conflict involvement and the complexity of polytraumatic disabilities, the call for education of military culture, war wounds, and reintegration considerations is paramount. Trained rehabilitation counselors must be knowledgeable of the invisible wounds and disabilities of war and be adept in screening for them. Counselors must also be educated in the military culture and the rehabilitation systems that exist within the military. Finally, Counselors need to be aware of the services and treatments available for this population.

The second prong of the five-pronged approach is an employment focus which is compatible with the education already provided to rehabilitation counselors as previously mentioned. Within this prong of the service model, delivery needs to exist as does an adequate knowledge of educational assistance and opportunities for Veterans. In many cases, the precursor to successful employment is suitable education. The third-prong is the use of self-management techniques to reduce comorbidities. Several measures of self-management are available as a tool to be used with a Veteran in the counseling process. Assessing this skill as well as planning for practice and competency is essential for secondary disability containment and independent living.

The fourth prong of service delivery includes family involvement. Given the extended length of conflict and the reality of multiple deployments and tours of duty, many service members are forced to balance their family role with their military role. Not only does service affect the Veteran, but it also affects the family members. Providing resources, education and coping strategies to families is of equal importance to providing rehabilitation care to the Veterans. Lastly, the fifth prong of service is a call for researchers to focus on the topic of

Veterans' transition and rehabilitation will greatly enhance service delivery and service options (Frain, Bethel, & Bishop, 2010).

#### **1.4 EXPERIENTIAL LEARNING FOR VETERANS IN ASSISTIVE TECHNOLOGY AND ENGINEERING (ELEVATE)**

One program that successfully incorporates and integrates the significant components of today's Veteran population with theories of self-efficacy, student engagement and successful transition into academics is the Experiential Learning for Veterans in Assistive Technology and Engineering (ELeVATE) program at the University of Pittsburgh's School of Health and Rehabilitation Science. ELeVATE is a 10-week internship program designed for Veterans with disabilities that are transitioning to postsecondary education with aims of pursuing a STEM (Science, Technology, Engineering, and Mathematics) degree. ELeVATE chooses to focus on the STEM degrees and potential professional fields for Veterans because of the natural parallels to the skills needed in these areas with the skills Veterans have acquired in the military. Not only do interests and previously accomplished military trainings align with STEM education requirements and projected employment opportunity, but currently the number of students pursuing STEM degrees is at an all-time low (Mitcham, 2013). Therefore, the likelihood of employment opportunities will be great in these fields in the next several years. Thus, a program that will focus on and further refine and develop technical skills as well as provide additional assistance with college transition is very advantageous for student Veterans.

ELeVATE is rooted in the social cognitive theory, drawing essential program components from the self-efficacy and student engagement theories. The goal of ELeVATE is to

increase the enrollment and retention of wounded, ill, and injured Veterans in engineering programs at the college level. ELeVATE aims to accomplish this goal through multiple interventions including experiential learning, rehabilitation counseling and supports, mentoring, academic preparation, and career exposure activities. As indicated by the program name, the experiential learning portion of the program is the hinge point of program design. Participants in the ELeVATE program participate in a research project at the rehabilitation engineering lab – the Human Engineering Research Laboratories (HERL) – at the University of Pittsburgh. Participants take part in ongoing design projects and research studies with graduate students who serve as mentors and teammates. This opportunity provides them experience with hands-on technical training with state-of-the-art machining equipment provided by HERL, as well as exposure to the research and design process. The intent of all activities is to enable the Veteran to accumulate mastery experiences that will build confidence and encourage persistence through education, which will ultimately lead to retention and graduation with the opportunity for full-time employment attainment.

ELeVATE prepares participants for higher education by exposing them to role models, experienced engineers as mentors, workshops, rehabilitation and vocational counseling, and both math and writing seminars. All students within the program were paired with peer mentors including other undergraduate, graduate, and veteran students. The students interacted with individuals who overcame similar struggles such as transitioning from military to civilian life and adjusting to newly incurred disabilities. The ELeVATE participants are able to see greater possibilities and adjust their own goals to reflect this sentiment. The rehabilitation and vocational counseling component is of great importance to the program. Participants meet regularly with a rehabilitation counseling graduate student, under the supervision of a

rehabilitation counseling faculty member, to discuss issues from compensatory strategies used to adjustment in a new setting, to navigating the Veterans' benefits system, to matching appropriate majors and careers to their interest.

Math and writing seminars are included in the weekly schedule. The intent of the math seminar is to focus on calculus level mathematics as well as to introduce concepts of statistics. An initial assessment is also administered upon the first meeting to gauge the skill level of the participants. Due to the varying levels of skills, the math seminar is structured in a way for individualization and personalization in learning. The seminars are structured in a way to provide basic instruction followed by individual work time with one-on-one assistance offered by the instructor. Mathematics serves as the foundation for many STEM focused disciplines. For student Veterans who have spent several years away from the classroom, the math seminar is an integral component in easing the transition back into the academic world.

Technical writing is a major focus of the program deliverables for the ELeVATE internship. Most participants will have to produce a high quality research paper to demonstrate the culmination of their summer research experience. The writing seminar includes various other assignments used to polish the technical writing skills of the participants. Conference-ready abstracts, elevator pitch speeches, as well as college admission essays for those who were not currently enrolled in an academic institution are requirements of the program. Like the math seminar, general instruction is provided to the class in addition to individual work time with one-on-one assistance available.

An additional goal of ELeVATE is to promote a feeling of community and brotherhood amongst the Veterans. It is also important to provide the Veterans with the skills, knowledge, and ability to transition back to civilian life and academia with confidence. In order to meet

these goals, participants take part in group vocational counseling meetings. The group meetings are led by the rehabilitation counseling graduate student with supervision and collaboration with department faculty members. The structure and topics of the sessions are loosely based in the F.R.E.E. 4 Vets program designed by psychologists from Virginia Commonwealth University. The F.R.E.E. 4 Vets program focuses on topics dealing with family, relationships, education, and employment. The group meetings were flexible enough to allow for individualization and adaptation to meet the needs and desires of the current cohort. The interns were able to voice their expectations for the meetings and suggest topics they would like to cover. Additional topics that were covered this summer included stress management, coping strategies, goal setting, effective decision making, interview skills, and resume writing.

The topics covered in the group meetings or any problems that were presented in the group meetings could be expanded on in a more individualized way during the one-on-one meetings with the graduate student rehabilitation counselor. The participants meet with the rehabilitation counselor during the first week of the program. In this way a rapport is established as well as expectations and goals are outlined. This structure allows for accountability between the counselor and the participant. The counselor is able to recognize any warning signs throughout the program and attend to those immediately. The counselor also provides added support and encouragement to keep the participants on track to meet both the program goals and their personal goals. The primary aim of the individual counseling sessions is to define and refine the participant's goals. Goals were made not only for the program but for future educational and vocational plans.

Participants complete the program with a formal final symposium in which they present their summer research findings in the form of a poster presentation. At the conclusion,

participants will have gained several mastery experiences that will aid in their self-efficacy. They will have also completed a formal research paper with an increased understanding in their project topic. The goal of the rehabilitation and vocational counseling component is to equip the participants with knowledge and understanding of personal strengths, appropriate goal orientation, and a plan for goal attainment.

## **1.5 SPECIFIC AIMS AND HYPOTHESES**

The purpose of this study was to determine the relationship between a transitional assistance program for Veterans with disabilities transitioning into postsecondary education and their perceived level of self-efficacy, level of student engagement, and positive academic and personal development. This study looked at a multicomponent transition program for Veterans with disabilities offered through the University of Pittsburgh's School of Health and Rehabilitation Sciences at the Human Engineering Research Laboratories – ELeVATE (Experiential Learning for Veterans in Assistive Technology and Engineering). The components of the program integrated an experiential learning research internship, academic preparation classes, professional exposure and development seminars, and rehabilitation and vocational counseling. The following specific aims and hypotheses were examined:

### **Specific Aim 1: Self-Efficacy, Student Engagement, and Academic Achievement**

Determine the relationship between ELeVATE and perceived levels of self-efficacy, student engagement, and academic achievement.

- **Hypothesis 1.A**

Veterans with disabilities in postsecondary education that participate in ELeVATE which integrates experiential learning opportunities will have a higher perceived level of self-efficacy than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.

- **Hypothesis 1.B**

Veterans with disabilities in postsecondary education that participate in ELeVATE will score higher in measures of student engagement than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.

- **Hypothesis 1.C**

Veterans with disabilities in postsecondary education that participate in ELeVATE will demonstrate higher levels of academic achievement, specifically in the area of engineering fundamentals as shown through the Fundamentals of Engineering (FE) exam, than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.

### **Specific Aim 2: Goal Orientation, Goal Attainment, and Personal Development**

Determine the influence of working with a rehabilitation counselor and participating in group rehabilitation and vocational meetings on goal orientation, attainment, and personal development.

- **Hypothesis 2**

Veterans with disabilities in postsecondary education that participate in ELeVATE and work with a rehabilitation counselor will demonstrate appropriate goal orientation,

progress towards goal attainment, and personal development as shown by progression throughout the ELeVATE program.



## **2.0 METHODS**

### **2.1 RESEARCH DESIGN**

This study was a cross-sectional, exploratory study that involved participants from the ELeVATE program for Veterans and a no-contact control group made up of student Veterans enrolled in science fields at the University of Pittsburgh. The purpose of the study was to determine the impact of a transitional assistance program (ELeVATE) on levels of self-efficacy, student engagement, and proficiency in engineering fundamentals as compared to a student Veteran group without the experience of a transitional program (“Non-ELeVATE group”). The intervention group that participated in ELeVATE will henceforth be named the “ELeVATE group”. Due to limited pre-test data for the ELeVATE group, this study analyzed post test data only. Demographic information was also collected as well as information regarding utilization of Veteran services on campus. Information was gathered via online questionnaires and surveys using a free survey manager website. Qualitative data were also collected from the ELeVATE group. Case notes from the individual meetings with the rehabilitation counselor were organized and analyzed. This study was a cross-sectional time point of a larger, longitudinal study that consists of an additional two data collection points and annual update surveys thereafter. For the purposes of this study; however, the first data collection point will be the focus and a preliminary

look at the impact of a transitional assistance program for wounded, ill, and injured veterans going into postsecondary education.

### **2.1.1 RECRUITMENT**

The ELeVATE program recruited prospective participants through the many relationships the Human Engineering Research Laboratories (HERL) has with local Veteran organizations. Flyers and announcements were sent and circulated through these partnerships (see Appendix A). The program staff also works closely with the University of Pittsburgh's Office of Veterans Services to connect with Veterans that would be eligible for the ELeVATE program. ELeVATE has also been presented at many conferences that has served as a marketing tool. The program has also been presented at the Student Veterans of America (SVA) annual conference. There is an online application process that requires a personal statement, letters of recommendation, and an updated resume. The applications are reviewed by program staff. Generally, a staff member will conduct phone interviews with the prospective participants to further determine eligibility and readiness. A formal acceptance letter, including information of stipend amount, is then sent to accepted participants.

Data were readily available due to ELeVATE concluding in 2013. Five participants were willing to participant in the research study (n=5). The control group was collected via recruitment through the University of Pittsburgh's Office of Veterans Services (OVS). OVS disseminated a recruitment flyer (see Appendix B) to attract interested student Veterans. The study received 13 interested participants including five ELeVATE participants to serve as the

experimental group. All interested participants had to meet with a research team member to review and sign the informed consent.

## **2.2 PARTICIPANTS**

Eligibility to participate in the research included the subject's age to be between 18-80 years. The subject had to report to be a Veteran as well as a student majoring in a science, technology, engineering or mathematics (STEM) field. Finally, the subject had to report willingness to complete instruments required by the study (see Appendix C for inclusion/exclusion form). The Non-ELeVATE group consisted of eight student Veterans. Seven men and one woman participated. The ELeVATE group included four male Veterans who had recently completed the ELeVATE program.

## **2.3 MATERIALS**

A questionnaire was created by the ELeVATE program staff to collect demographic information, employment history, and educational plans. All Veterans interested in participating in the ELeVATE program are required to complete the questionnaire. The same program questionnaire was completed by the non-ELeVATE control group participants in the research study. The ELeVATE questionnaire consisted of questions with respect to military service and military special occupations as well as disability status. Typical demographic information such as name, address, email address, ethnicity and birthdate were collected. The questionnaire also included a

portion that spoke to intended major of study and interest in graduate school or post-graduate work. The Veteran Services Utilization Questionnaire was also developed by the program staff and included questions such as “*To what extent would you say that you are knowledgeable about the accommodations and support services that are available to you to help you succeed in your studies and/or career?*” with answers ranging from “*I don’t know any*”, “*I am slightly aware*” and “*I have good awareness of services and accommodations.*” Other questions included “*Did you make use of any special accommodations or support services during this past school term or the past three months?*” and “*Rate how effective each accommodation or support service was*” with ratings on a four point scale ranging from “*Not At All Effective*” to “*Very Effective.*” This questionnaire also included open-ended questions where the participant was able to elaborate of perceived effectiveness of services and perceived progress toward goals.

The General Self-Efficacy Scale (GSE) (Schwarzer & Jerusalem, 1995) (see Appendix D) was used to measure the overall perceived self-efficacy of the research control group participants as well as the ELeVATE group. The GSE has been proven to be both reliable and valid for several years and in several nations (Scholz, Doña, Sud, & Schwarzer, 2002). There is a reported internal consistency range of .76-.90 for reliability (Schwarzer & Jerusalem, 1995). There are ten questions. Each item is scored on a four-point Likert scale from 1 (*Not At All True*) to 4 (*Exactly True*). A lower score is indicative of a lower perceived self-efficacy and higher scores indicates higher perceived self-efficacy. The total score is found by taking the sum of all questions with a result ranging from 10-40. The sum of all answered are found and then averaged. The scores can range from 10-40. Schwarzer and Jerusalem do not endorse categorical titles of “*low self-efficacy*” and “*high self-efficacy*” but to instead create a median split and to dichotomize in this way. The GSE includes questions to gauge self-esteem and level

of perseverance such as *“I can always manage to solve difficult problems if I try hard enough”*, *“I am certain that I can accomplish my goals”* and *“I am confident that I could deal efficiently with unexpected events.”*

The National Survey on Student Engagement (NSSE), which was developed by the National Center for Higher Education Management Systems in 1998, was included in the survey battery. The NSSE is the most commonly used metric to assess student engagement. There 106 questions in the survey that contribute to five major areas within the survey. The final 15 questions are demographic in nature and are generally used primarily for institutional records. The sections include questions in regards to student participation in educational activities, institutional requirements of students, student perception of academic environment, demographic information, and student’s estimation of educational and personal growth since entering postsecondary education. The intent of the NSSE is three-fold: (1) institutional improvement; (2) public advocacy; and (3) documentation of best practices. The content of the NSSE reflects a student behaviors highly correlated with many desirable learning and personal development outcomes of college (Kuh, 2009).

The NSSE has high process validity as indicated by a study conducted with minority-serving institutions. Overall, all formatting and context information of questions were well understood (Conrad & Blair, 1996). The construct validity coefficient is .70 (Kuh, 2001). Predictive validity is also strong for the NSSE. It has been proven to be statistically significant on persistence, even after controlling for background characteristics. First year college students, on average have a probability of .85 of returning where as those who are more engaged than the average student have a probability of returning of .91 (Kuh, Kinzie, Cruce, Shoup, & Gonyea, 2006). A 2013 study was conducted on the internal consistency reliability of the NSSE. The

study looked at the four major themes of the survey and individually measured reliability. The reliability coefficients ranged from .77-.90 (Indiana University).

The NSSE produces ten engagement indicator scores. This is a recent update from the previous five benchmarks that were used until 2012. The benchmark areas were absorbed into the ten engagement indicators which include: Higher-order Learning (HO), Reflective and Integrative Learning (RI), Learning Strategies (LS), Quantitative Reasoning (QR), Collaborative Learning (CL), Discussion with Diverse Others (DD), Student-Faculty Interaction (SF), Effective Teaching Practices (ET), Quality of Interactions (QI), and Supportive Environment (SE). From the ten indicators emerges four major themes which include: Academic Challenge (made up of HO, RI, LS, and QR), Learning with Peers (made up of CL and DD), Experience with Faculty (made up of SF and ET), and Campus Environment (made up of QI and SE). The four themes consist of the ten engagement indicators. The Academic Challenge theme includes four engagement indicators: Higher-Order Learning (HO), Reflective and Integrative Learning (RI), Learning Style (LS), and Quantitative Reason (QR). The HO indicator included four items to answer the question, *“During the current school year, how much has your coursework emphasized the following”*. There were two items within the HO questions that the ELeVATE participants averaged a higher individual score. The items included, *“Applying facts, theories, or methods to practical problems or new situations”*, and *“Analyzing an idea, experience, or line of reasoning in depth by examining its parts.”*

The RI indicator included seven items to answer to the question, *“During the school year, about how often have you done the following?”* The individual ELeVATE group responses were again summed and averaged. The same was done for the Non-ELeVATE group. The LS indicator included three items to answer the question *“During the school year, about how often*

*have you done the following?"* The individual items included, *"Identified key information from reading assignments"*, *"Reviewed your notes after class"*, and *"Summarized what you learning in from or from course materials."* The QR indicator included three items to answer the question, *"During the current school year, about how often have you done the following?"* The individual items included, *"Reached conclusions based on your own analysis of numerical information (numbers, graphs, statistics, etc.)"*, *"Used numerical information to examine a real-world problem or issue (unemployment, climate change, public health, etc.)"*, and *"Evaluated what others have concluded from numerical information."* This theme consisted of two indicator areas: Collaborative Learning (CL) and Discussion with Diverse Others (DD). The CL indicator included four items to answer the question, *"During the current school year, about how often have you done the following?"* The individual items included, *"Asked another student to help you understand course material"*, *"Explained course material to one or more students"*, *"Prepared for exams by discussing or working through course material with other students"*, and *"worked with other students on course projects or assignments."* There are four items within DD to answer the question, *"During the current school year, about how often have you had discussions with people from the following groups?"*

The results can be used in comparison with national findings from other colleges and universities or internally at a specific university. Frequency distribution of results within a single university can be analyzed or internal group comparisons can be made on a single campus.

The Fundamentals of Engineering exam (FE) was created by the National Council of Examiners for Engineering and Surveying (NCEES) and is typically the first step of a two-step process in becoming a licensed professional engineer. Topics that are included in the FE exam include: Mathematics, Engineering Probability and Statistics, Chemistry, Computers, Ethics and

Business Practices, Engineering Economics, Engineering Mechanics (Statics and Dynamics), Strength of Materials, Material Properties, Fluid Mechanics, Electricity and Magnetism, Thermodynamic, and Biology. For this study, a mini diagnostic test taken from a study preparation book published by Barron’s Educational Series was used. The diagnostic exam includes 41 questions that are stated to be very similar in format and nature to the ones found on the certifying exams. The answer key is provided in the study preparation book and allows for identification of areas of strengths and weaknesses (Olia, 2008).

Table 2: Summary of Utilized Questionnaires, Surveys and Exams

<i>Name of Survey or Questionnaire, Reference</i>	<i>Author (year)</i>
ELeVATE Program questionnaire	<i>ELeVATE Program Staff, 2011</i>
Veteran Service Utilization Survey	<i>OpenMinds, 2013</i>
General Self-Efficacy Scale	<i>Schwarzer &amp; Jerusalem, 1995</i>
National Survey on Student Engagement	<i>National Center for Higher Education Management Systems, 1998</i>
Fundamentals of Engineering exam	<i>NCEES, n.d.</i>

## 2.4 PROCEDURES

The intervention for the experimental group took place throughout the summer of 2013. The ELeVATE program started in May 2013 and ran for 10 weeks. Each participant was assigned a summer research project as well as graduate student research mentor who worked in the lab. The first week of the program included several orientation activities and tours of the facility. There were several cohort bonding experiences that included entertainment activities, outings and meal gatherings. The first week also included an individual intake interview with the rehabilitation



counselor. Participants met with the rehabilitation counselor individually every other week throughout the program as well as weekly for the group meetings. Topics that were covered in the group meetings included goal-setting, support network building, stress management, coping strategies, understanding differences, and dealing with roadblocks. Supplemental meetings were also held that included information presented on resume writing tips, interviewing skills, and college application writing (see Appendix E for 10 week schedule and example of group meeting content). In addition to the vocational and rehabilitation meetings, the participants worked in the lab on their respective projects and attended professional development workshops. The intervention also included academic preparation classes. Participants spent approximately three hours in a writing class each week and approximately five hours a week in a math class. Data was collected from the ELeVATE participants at the conclusion of the program.

Data collection was through an online survey medium. Communication to participants was through email. A mass de-identified email was sent to all study participants to indicate that the online surveys were open and available for a length of one week for them to complete. The email was sent with an instructional letter (see Appendix F) that detailed the surveys and questionnaires that were included in the research study which are listed in Table 4. Participants were instructed to complete the ELeVATE program questionnaire, the General Self-Efficacy Scale (GSE), the National Survey on Student Engagement (NSSE), and a Veteran Services Utilization questionnaire. For those that indicated a specific engineering major (excluding Information Science, Computer Science, Actuarial Sciences, and Geographical Information Systems) were prompted to complete the Fundamentals of Engineering Exam (FE) in addition to the basic battery. Participants completed the study individually.

All surveys, questionnaires, and exams had to be completed in one sitting. Participants were not able to go back and review or change previously answered questions. Total time to complete the study was estimated to be between 60-90 minutes with an additional 75 minutes for the Fundamentals of Engineering Exam. A second email was sent 24-hours before the window for survey completion would close. All participants were compensated upon verification of study completion as indicated by the online survey manager site. SPSS software was used for the statistical analysis and anecdotal findings were drawn from the analysis of the qualitative data.

Institutional Review Board approval was obtained by the University of Pittsburgh prior to any research activities. The accepted study and study protocol was approved as a minimal risk study (PRO12090405).

## **3.0 ANALYSIS**

### **3.1 METHODS FOR STATISTICAL ANALYSIS**

Data collected from the battery of assessments were manually numerically coded and entered into a Microsoft Excel spreadsheet. Prior to all statistical analyses, descriptive statistics were used to analyze the data sets for normality and missing variables. Parametric and nonparametric group comparisons were run to determine statistical significance. Alpha levels were set at 0.05 a priori. SPSS Version 21 was used for all analyses (SPSS Inc.). A nonparametric Mann-Whitney U Test was used for the General Self-Efficacy Scale (GSE). Descriptive statistics and measures of central tendency were used to analyze individual item, engagement indicators, and themes for the National Survey of Student Engagement (NSSE). Inferential statistics and anecdotal results were drawn from the qualitative components of the study.

#### **Specific Aim 1: Self-Efficacy, Student Engagement, and Academic Achievement**

Determine the relationship between ELeVATE and perceived levels of self-efficacy, student engagement, and academic achievement.

### **Hypothesis 1.A**

**Veterans with disabilities in postsecondary education that participate in ELeVATE (a transitional assistance program) which integrates experiential learning opportunities will have a higher perceived level of self-efficacy than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**

The scores of the General Self-Efficacy Scale were individually summed for each participant. The sum scores were then categorized into the experimental group or the control group. The group sums were then averaged. Despite meeting the criteria to be analyzed as parametric data, non-parametric analysis was chosen due to the small sample size and inequality of group size. The Mann-Whitney U Test was used with a 95% confidence interval.

### **Hypothesis 1.B**

**Veterans with disabilities in postsecondary education that participate in ELeVATE will score higher in measures of student engagement than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**

The NSSE answers were manually transferred to an Excel spreadsheet. The answers were then manually coded based on the NSSE 2013 Codebook. Individual item scores were averaged and compared across groups. Scores for individual respondents were summed and then averaged to determine group indicator scores and overall theme scores. Responses were scored on a four point scale from “*Very Often*” scoring four points to “*Never*” scoring one point. Each engagement indicator has respective questions that compile that indicator score. For the purpose of this study, only two themes were analyzed: Academic Challenge and Learning with Peers. The remaining two themes (Experience with Faculty and Campus Environment) were not

included since they were not directly relative to the study objective. The effects of the interventions applied were concentrated on individual learning and development which are more accurately displayed in the themes of focus. One ELeVATE respondent was excluded from the NSSE analysis because of error in reporting results due to lack of understanding and lack of generalization of questions as participant is not currently enrolled in school. A higher NSSE score indicates higher engagement where as a lower score indicates less engagement. Descriptive statistics, central tendencies analysis, and inductive statistics were used for analysis of NSSE scores.

### **3.2 METHODS FOR QUALITATIVE ANALYSIS**

#### **Hypothesis 1.C**

**Veterans with disabilities in postsecondary education that participate in ELeVATE will demonstrate higher levels of academic achievement, specifically in the area of engineering fundamentals as shown through the FE exam, than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**

The Fundamentals of Engineering exams were scored based on number of questions answered correctly. Due to do the small sample size, descriptive statistics were used and anecdotal findings were deduced. The percentage of correctly answered questions was calculated. The group average percentage scores were compared and the group score median was found.

## **Specific Aim 2: Goal Orientation, Goal Attainment, and Personal Development**

Determine the influence of working with a rehabilitation counselor and participating in group rehabilitation and vocational meetings on goal orientation, attainment, and personal development.

### **Hypothesis 2**

**Veterans with disabilities in postsecondary education that participate in ELeVATE and work with a rehabilitation counselor will demonstrate appropriate goal orientation, progress towards goal attainment, and personal development as shown by progression throughout the ELeVATE program.**

Qualitative data were collected from rehabilitation counseling notes for Veterans who participated in ELeVATE. These case notes were reviewed and analyzed for emergent trends and significant findings. Two participants were used as case studies to depict the variation in progression of goal orientation and personal and professional development.

## 4.0 RESULTS

A total of twelve respondents consented to participate in the study and successfully completed the surveys and questionnaires. Aside from the intervention and disability status, the groups did not vary demographically. The average age of all participants was 30.08 years.

The experimental group consisted of four student Veterans who went through the ELeVATE program. All participants in the ELeVATE group were men and the average age was 30.5 years. There were eight control subjects that made up the Non-ELeVATE group. There were seven males and one female. The average age for the Non-ELeVATE group was 29.9 years. Demographic information is displayed in Tables 3 and 4.

Table 3: ELeVATE Group Demographic Information

<i>ID #</i>	<i>Age</i>	<i>Gender (M/F)</i>	<i>Race/Ethnicity</i>	<i>School Year</i>	<i>Major (or Intended)</i>	<i>Disability Status</i>
1	31	M	Hispanic/Latino	Pre-College	Mechanical Engineering	Mobility/Orthopedic
2	33	M	Caucasian	Senior	Mechanical Engineering	Mobility/Orthopedic/ Chronic Pain
3	25	M	Caucasian	Sophomore	Engineering	Tinnitus
4	33	M	Caucasian	Sophomore	Information Science	Psychological/Psychiatric

Table 4: Control (Non-ELeVATE) Group Demographic Information

<i>ID #</i>	<i>Age</i>	<i>Gender (M/F)</i>	<i>Race/Ethnicity</i>	<i>School Year</i>	<i>Major (or Intended)</i>	<i>Disability Status</i>
1	25	M	Caucasian	Senior	Actuarial Science	Psychological/Psychiatric
2	41	M	Caucasian	Post-grad	Geographical Information Systems	N/A
3	32	M	Caucasian	Post-grad	Nuclear Engineering	N/A
4	28	M	Caucasian	Sophomore	Computer Science	N/A
5	25	M	Caucasian	Senior	Mechanical Engineering	Mobility/Orthopedic/Psychiatric
6	30	M	Caucasian	Junior	Mechanical Engineering	N/A
7	31	F	Caucasian	Junior	Electrical Engineering	N/A
8	27	M	Caucasian	Junior	Mechanical Engineering	N/A

#### 4.1 SPECIFIC AIM 1: SELF-EFFICACY, STUDENT ENGAGEMENT, AND ACADEMIC ACHIEVEMENT

##### Hypothesis 1.A

**Veterans with disabilities in postsecondary education that participate in ELeVATE (a transitional assistance program) which integrates experiential learning opportunities will have a higher perceived level of self-efficacy than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**



There were ten questions on the General Self-Efficacy Scale (GSE) that the research study participants answered. The control group had an average sum of 33.88 (SD= 3.35). The experimental group had an average sum of 32.75 (SD= 2.63). Group averages are represented in Figure 1. The median for the individual sums was 33. The individual sums are depicted in Figure 2 with the median value indicated. Two participants in the experimental group scored at or above the median score (50%) whereas only three (37.5%) of the control group scored at or above the median score.

The nonparametric test used to analyze the results of the GSE was the Mann-Whitney U Test. The result was that there was no a significant statistical difference between the group sum averages. The *U* value significance with an alpha level set at .05 was .683, not meeting the criteria to reject the null hypothesis. The test results are found in Table 5.

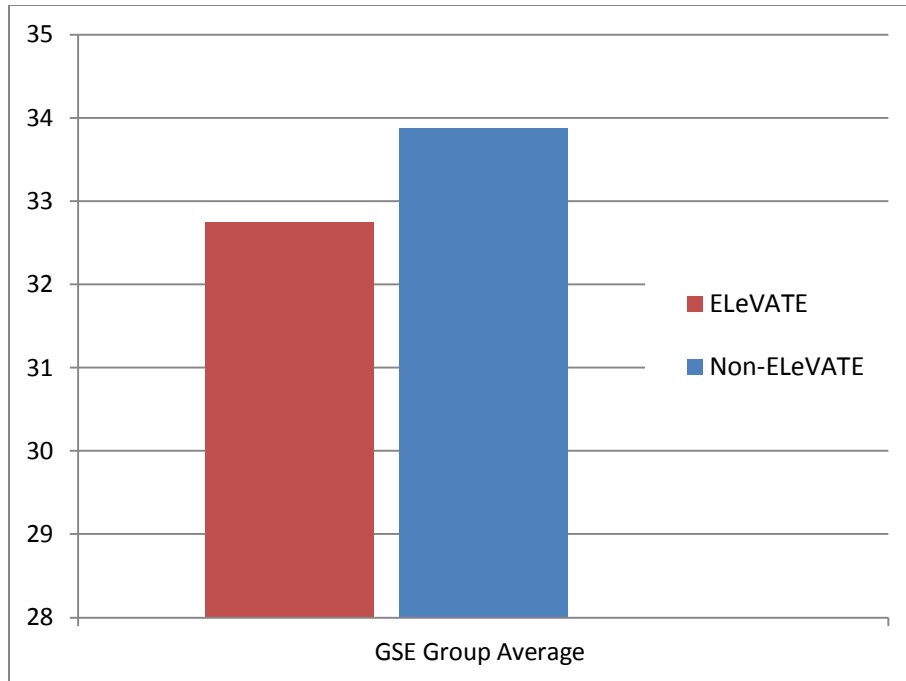


Figure 1: GSE Group Averages

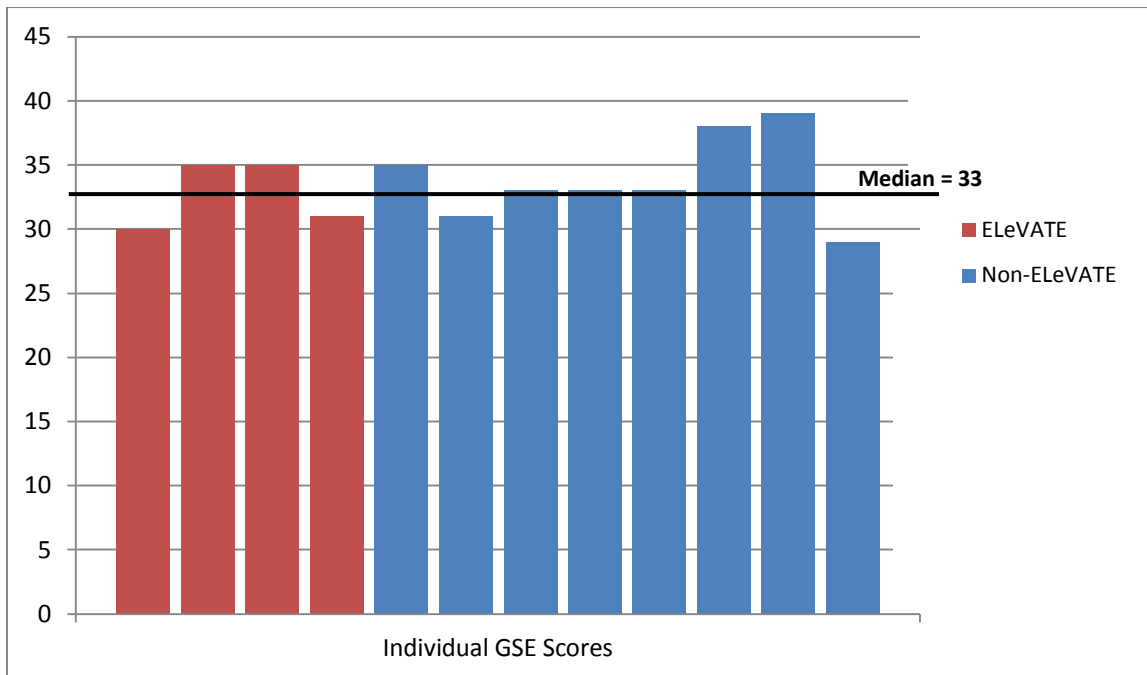


Figure 2: Individual GSE Sums

Table 5: GSE Group Averages Mann Whitney U Test

	<b>Null Hypothesis</b>	<b>Test</b>	<b>Sig. (alpha = .05)</b>	<b>Decision</b>
GSE Group Averages	The distribution of the sum is the same between groups.	Independent-Samples Mann-Whitney U Test	.683	Retain the null hypothesis

### **Hypothesis 1.B**

**Veterans with disabilities in postsecondary education that participate in ELeVATE will score higher in measures of student engagement than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**

There are four major themes coded within the National Survey of Student Engagement. The higher-order thinking (HO) indicator scores for the ELeVATE group averages were summed and resulted in a HO indicator score of 7.3. The Non-ELeVATE group totaled a HO indicator score of 7.5. The item scores for the HO indicator are displayed in Table 6.

The reflective and integrative learning (RI) scores for the ELeVATE group were averaged, summed and resulted in a RI indicator score of 13.3. The Non-ELeVATE group had a RI indicator score of 15. However, the ELeVATE group scored a higher average on two of the individual responses which included, *“Included diverse perspectives (political, religious, racial/ethnic, gender, etc.) in course discussion or assignment”*, and *“Connected ideas from your courses to your prior experiences and knowledge.”* The item scores for the RI indicator are displayed in Table 7.

The ELeVATE group responses scored a total of 4.0 for the learning strategies (LS) indicator whereas the Non-ELeVATE group scored 6.1 for the LS indicator. The item scores for the LS indicator are displayed in Table 8. The ELeVATE group responses scored a total of 6.6 for the quantitative reasoning (QR) indicator whereas as the Non-ELeVATE group scored 8.3. The item scores for the QR indicator are displayed in Table 9.

The study also looked at the Learning with Peers theme of the NSSE. The ELeVATE group responses scored a total of 6.6 for the collaborative learning (CL) indicator and the Non-ELeVATE group scored 8.6. The ELeVATE group scored higher on one individual item in the CL questions. The item in which there was a higher score for the ELeVATE group was *“Explained course material to one or more students.”* The item scores for the CL indicator are displayed in Table 10.

The second indicator within the Learning with Peers theme is discussion with diverse others (DD). The four items included groups that differed in ethnicity, economic background, religious beliefs, and political views. The ELeVATE group scored a total of 4.6 and the Non-ELeVATE group scored a total of 6.3. The item scores for the DD indicator are displayed in Table 11.

The ELeVATE group scored a total of 31.2 and the Non-ELeVATE group scored a total of 36.9 for the Academic Challenge theme. The ELeVATE group scored a total of 11.2 and the Non-ELeVATE group scored a total of 14.9 for the Learning with Peers theme.

Table 6: NSSE Higher Order Learning Indicator Scores

<i>Engagement Indicator</i>	<i>Higher-Order Thinking</i>			
	a	b	c	d
ELeVATE	1.6	1.6	2	2
Non-ELeVATE	1.5	1.5	2.1	1.2

Table 7: NSSE Reflective and Integrative Learning Indicator Scores

<i>Engagement Indicator</i>	<i>Reflective and Integrative Learning</i>						
	a	b	c	d	e	f	g
ELeVATE	1.6	2	3	1.6	1.6	1.6	1.6
Non-ELeVATE	1.8	2.1	2.8	2.3	2.1	2.1	1.5

Table 8: NSSE Learning Strategies Indicator Scores

<i>Engagement Indicator</i>	<i>Learning Strategies</i>		
	a	b	c
ELeVATE	1.3	1.3	1.3
Non-ELeVATE	2	2.1	2

Table 9: NSSE Quantitative Reasoning Indicator Scores

<i>Engagement Indicator</i>	<i>Quantitative Reasoning</i>		
	a	b	c
ELeVATE	2	2.3	2.3
Non-ELeVATE	2.7	3	2.6

Table 10: NSSE Collaborative Learning Indicator Scores

<i>Engagement Indicator</i>	<i>Collaborative Learning</i>			
	a	b	c	d
ELeVATE	1.3	2.3	1.3	1.6
Non-ELeVATE	2.2	1.7	2.3	2.5

Table 11: NSSE Discussion with Diverse Others Indicator Scores

<i>Engagement Indicator</i>	<i>Discussion with Diverse Others</i>			
	a	b	c	d
ELeVATE	1.3	1	1.3	1
Non-ELeVATE	1.6	1.8	1.2	1.6

### **Hypothesis 1.C**

**Veterans with disabilities in postsecondary education that participate in ELeVATE will demonstrate higher levels of academic achievement, specifically in the area of engineering fundamentals as shown through the FE exam, than Veterans with disabilities in postsecondary education that do not participate in a transitional assistance program.**

The design of the research study only had those participants who were currently enrolled in an engineering field complete the Fundamentals of Engineering exam. Therefore, only six participants, two from the ELeVATE group and four from the Non-ELeVATE group, completed the FE exam as part of the questionnaire battery. The FE exam includes 41 questions. The exams were scored for percentages of questions answered correctly. The ELeVATE participants scored 46% (-22) and 37% (-26). The average score in the ELeVATE group was 41% (-24). The Non-ELeVATE control group participants scored 51% (-20), 56% (-18), 41% (-24), and 49% (-21). The average score in the Non-ELeVATE group was 49% (-20.75). The individual

percentage scores are depicted in Figure 3 with the median score indicated. The group score averages are shown in Figure 4.

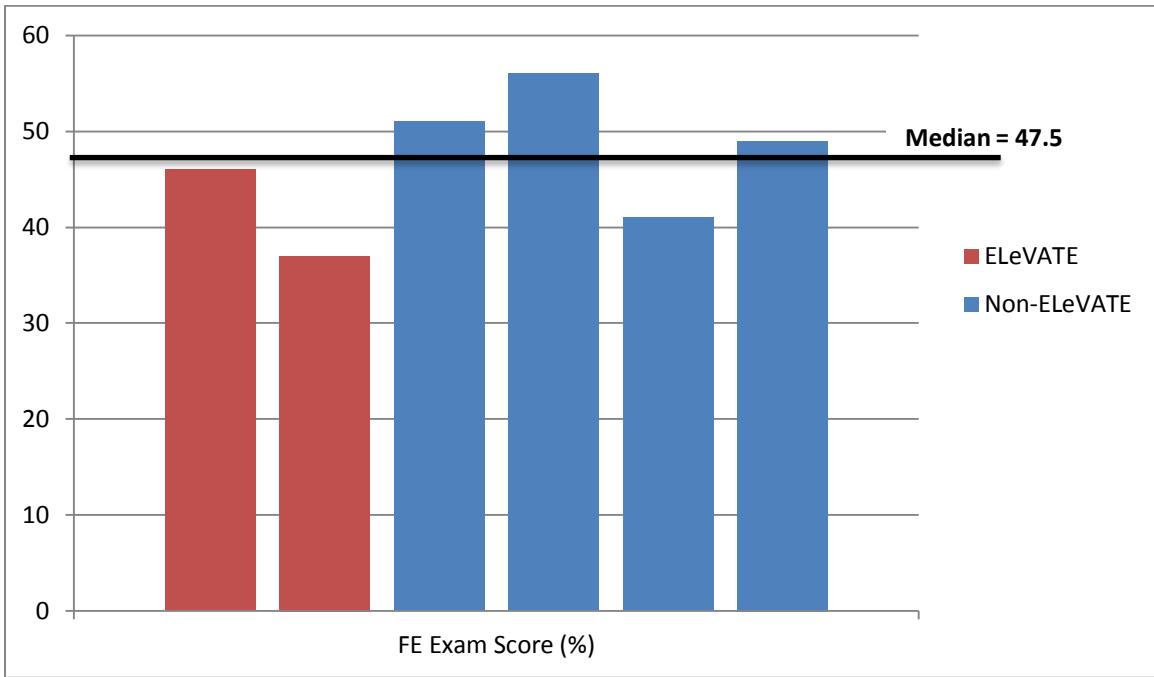
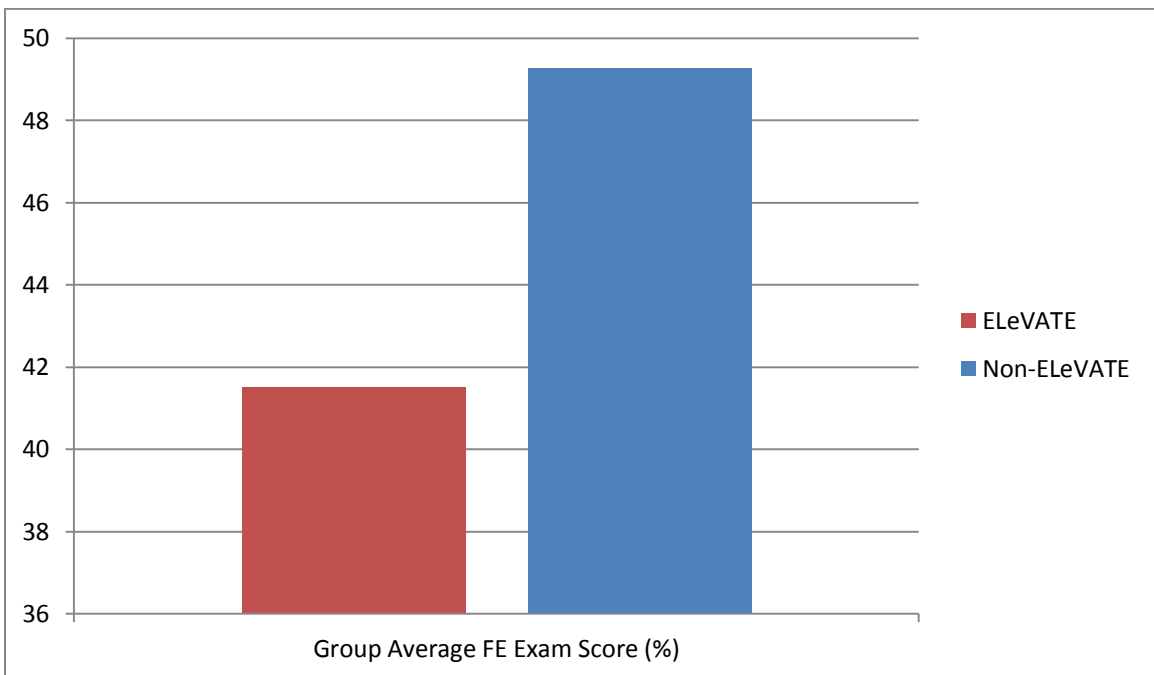


Figure 3: Individual FE Exam Scores



## **4.2 GOAL ORIENTATION, GOAL ATTAINMENT, AND PERSONAL DEVELOPMENT**

### **Hypothesis 2**

**Veterans with disabilities in postsecondary education that participate in ELeVATE and work with a rehabilitation counselor will demonstrate appropriate goal orientation, progress towards goal attainment, and personal development as shown by progression throughout the ELeVATE program.**

### **4.2.1 CASE STUDY A**

Case study A, John was a 24 year old Caucasian, single male. He was a 2007 high school graduate and joined the Marine Corps upon graduation. His motivation for joining was primarily his long term goal of education. His time in the service was four years of active duty. He spent over two years in Japan and seven months in Afghanistan working as an air craft mechanic. John spent the last year of his service in California where he retired from the Marines as a Corporal (E4). He retired with a 20% service connected disability for tinnitus. He enrolled in a community college and remained in California for an additional year. He moved back to the Pittsburgh area and enrolled at the University of Pittsburgh to pursue engineering. He became involved in the student group for Veterans on campus and heard about the ELeVATE program



through the Office of Veterans Services. Case study A applied to the ELeVATE program during the spring semester of his sophomore year. Case Study #1 was very motivated, hard-working and determined. John presented as a high achiever, self-initiating, and pro-active in regards to creating opportunities for himself to succeed.

Upon initial interview, his stated goals were to create a strong network among the contacts at the lab and to glean knowledge from the professionals around him. His short term goals were to finish his general education classes successfully as he was enrolled in a math class concurrent to his ELeVATE experience, as well as conduct his own literature review on the topic of his assigned project. His long term goal was to become a successful civil engineer.

John received excellent reviews from mentors and professors as being helpful, motivated, and eager to learn and be challenged. At the mid-point interview, John reported difficulty in using the engineering and finite element analysis computer software. In his mid-point interview with the rehabilitation counselor, he probed for possible remedies and subsequently was introduced to a willing graduate student in the lab to personally tutor him.

At the final exit interview, John had successfully completed a research paper, a poster, and prepared a short informational speech on the subject matter of his summer research project. He expressed his newly acquired competencies in computer engineering software and in technical writing. He noted that he had improved his time management skills and was able to prioritize his school assignments and daily tasks. His goals, at this time, were to move on from ELeVATE and continue in research. He wanted to present his summer research project at a conference and had a future goal of presenting his own research at a national conference. An additional goal, that was new from the beginning of the program, was his desire to volunteer in the community and become a leader within the student group for student Veterans.

John submitted his summer research paper to a national conference for minority students and was accepted and had the opportunity to present his research. John demonstrated development in goal orientation in that his goals began as unspecific and without detail. At the conclusion of the program his goals were realistic, specific, and measureable. He also demonstrated successful goal attainment as he was able to present his research at a conference. His desire to volunteer and become more involved in his community on campus depicts an increased level of engagement. Finally, his refined time management skills in addition to his intentionality to increase competencies portray both personal and professional development.

#### **4.2.2 CASE STUDY B**

Case study B, Joe was a 31 year old Black and Hispanic, single male. He served for approximately eight years in the Army. He enlisted in the Army in a delayed entry program. He joined after his junior year of high school and completed basic training the summer before his senior year. Upon graduation from high school he attended Advanced Individual Training (AIT) and became an automobile technical mechanic. Joe's reason for joining military was for lack of connection to anything else. Complex family dynamics and a troubled childhood resulted in Joe, self-reportedly, distancing himself from close relationships.

Joe spent four years in the reserves, while pursuing education at a technical training school in Texas. He became active duty in 2001. Shortly after 9/11, he received new orders before being deployed to Iraq in 2005. He spent one year in Iraq before his return to the States until he was medically discharged in 2008 after an automobile accident on base. Joe was 100% service connected for knee impairment and Adrenal Insufficiency (AI) due to the accident.

There was also symptomatology of an acquired brain injury as he noted memory deficits and concentration difficulties.

He was told of the ELeVATE program by this VA counselor and applied to the program and was accepted. During the initial intake interview, Joe demonstrated tangential story-telling, disconnected humor and a scattered stream of thought. He reported anxiety and concern with the math and writing classes because of his memory deficits and low concentration. He did not report having any short term goals at that time but stated a long term goal of getting his degree in engineering in order to help other Veterans with disabilities.

Joe rarely participated in the initial group meetings and kept to himself during social engagements. During the mid-point interview with the rehabilitation counselor, he expressed interest in staying in the Pittsburgh area and attending the University of Pittsburgh's school of engineering. He reported increased skills in the lab with the machining equipment. He expressed interest in learning more about the machines and getting experience with them. Joe looked into attaining a Smart Pen from his VA counselor from home to aid in his studies for the math and science classes. His stated short term goals included writing a personal statement, completing a research paper for his project, and applying to the University of Pittsburgh by the end of the ELeVATE program.

By the conclusion of the program, Joe became more active in the group meetings and more involved in social activities. During the final award presentation, he received the "most-friendly intern" award. He became involved in a community rowing and crew organization for people with disabilities and organized an ELeVATE program outing to row. He took the initiative and found a graduate student researcher to tutor him in engineering computer programs. During the exit interview with the rehabilitation counselor, he had completed a research paper,

presented his research at the final symposium poster presentation, and submitted his application to the University of Pittsburgh. He stated that his most valued lesson learned was learning the importance of being more vocal and intentional about finding opportunities for learning and growth.

Joe showed great improvement in goal orientation. He began the program without knowledge or concept of short term goals. He was able to express a long term goal, albeit vague. By the end of the program he was able to communicate short term goals, steps to achieve goals, in addition to acquiring the skill of self-reflection and insight.

## 5.0 DISCUSSION

The current study was a pilot study of the ELeVATE transitional program for Veterans with disabilities. The structure of this study will serve as the foundation for continued and enhanced research in this area. Due to the small sample size and the novelty of data collection, the results of this study should not be generalized. The results are essential to program evaluation and should be used to guide further treatment and data collection.

The available literature reports high rates of unemployment for Veterans in America today as well as the majority reporting difficulty in transition. Sixty-nine percent of Veterans state that their greatest challenge in transition is finding a civilian job. Moreover, almost half, 46% state that the obstacle in finding a job is lacking the required education and ability to explain how military skills translate (Prudential, 2012). The current research results speak to the latter two arguments of education and perceived ability. The ELeVATE program provides academic opportunity, transition assistance, and mastery experience to build self-efficacy. Theoretically, the combination of the provisions of ELeVATE will lead to successful academic retention to graduation and job attainment. The current study looked at the perceived self-efficacy through the analysis of the GSE, the level of engagement in mastery or learning experiences through analysis of the NSSE, as well as academic achievement in the results of the FE. Additional conclusions were drawn from the quantitative data collected from the rehabilitation counseling case notes.

Although the results of the General Self-Efficacy Scale were not found to be statistically significant nor were the ELeVATE group's average higher than the control group average, important implications can be drawn from these results. The median score on the GSE was found to be 33. Two of the four ELeVATE participants (50%) scored at or above the median score. In comparison, only three of the eight (37.5%) of the non-ELeVATE participants scored at or above the median value. The control group was made up of a larger number of student Veterans than was the ELeVATE group which weighs the averages in the favor of the control group. But the likelihood of having a perceived self-efficacy at or above the median value in this student Veteran population is greater among the ELeVATE participants. Moreover, all self-efficacy scores were high. The lowest reported score was 29 (out of 40). All ELeVATE participants amassed a self-efficacy score of 30 or above. Although the hypothesis was not supported and the ELeVATE group did not exceed a GSE higher than control group, it is critical to note that the control group consisted of high achieving student Veterans. Three of the control participants were working on second degrees. Therefore, ELeVATE participants demonstrated above average levels of engagement and positive coping skills to deal with transition.

Military training and military experiences could be partially responsible the substantial self-efficacy as the military could have provided opportunities for self-efficacy building in the form of mastery experiences, observational learning and social persuasion. Several military careers are highly focused on technical and mechanical skills training. There is literature that reports students with disabilities, specifically learning disabilities, overestimate their abilities due to lack of metacognitive awareness or inability to accurately analysis higher order task analysis. When the overestimation is drastically different from the quality of performance, it is known as inaccuracy in efficacy calibration (Klassen, 2002). However, Bandura states that moderate

overconfidence can promote achievement, but to be wary, because gross miscalculations can be problematic (Bandura, 1997).

The ELeVATE program is also focused on these areas, preparing students for careers in the STEM field. When considering the model of anchoring, action, and efficacy (Cervone & Peake, 1986), if the military serves as the anchor for the student Veterans, providing a foundationally high initial value, then ELeVATE would be the action needed to increase self-efficacy beyond that of the average student Veteran. Despite statistical evidence not supporting hypothesis 1.A, the secondary results and implications drawn from more thorough analysis provide a basis to support the overall program and continue research for the specific hypothesis.

The National Survey of Student Engagement (NSSE) is an extensive questionnaire that includes many questions and areas of interest. This study looked most closely at two of the four NSSE themes (Academic Challenge and Learning with Peers). Within these two themes there were a total of six indicators in question. Despite the overall scores and averages favoring the Non-ELeVATE group as having a higher degree of student engagement, it is important to note the higher scores for several of the individual items for the ELeVATE group. In the Higher-Ordering Thinking (HO) indicator, the ELeVATE group reported coursework or learning that emphasized applying methods or theories to practical problems or new situations. Many of the Veterans in transition are in new situations as some are entering postsecondary education for the first time. Others are transitioning back into the classroom from several years away from the academic environment. These new or problematic situations can cause obstacles in education. ELeVATE aims to provide Veterans with strategies, knowledge, and coping mechanisms to be utilized in these challenging situations that will arise in postsecondary education. As is evidenced by the NSSE, ELeVATE Veterans report a higher emphasis on theoretical application

of new methodology to use in problem situations. This item also has an undertone of resilience which is a quintessential component to both the theory of self-efficacy as well as military mentality.

ELeVATE Veterans also reported a greater emphasis on analyzing an idea or experience in depth by examining its parts. In counseling, this technique is known as task or solution analysis. The ELeVATE group participated in two group rehabilitation counseling meetings that specifically focused on goal setting and goal ladders which is a systematic process of achieving a goal by deconstructing the objective into smaller, achievable tasks. This level of higher-order thinking is advantageous to students as it is reflected in their level of engagement. Level of engagement can then be extrapolated to a greater degree of knowledge and understanding. In keeping with the theory of self-efficacy, these elements are presumed to produce a higher level of self-efficacy which will cause greater outcomes in education and employment.

There is one final item on the NSSE in which the ELeVATE group had a higher score that is worth noting. The ELeVATE group reported a higher score for connecting their prior experiences and knowledge to their current courses. This demonstrates a high level of reflective and integrative learning. Having the ability to generalize and conceptualize patterns of thought increases one's ability to persist in difficult situations and find solutions to problems.

The student Veterans involved in the study were from varying years and stages of education. The result of the recruitment of control subjects yielded third or fourth year students majoring in engineering or students Veterans pursuing an engineering degree as a second degree. One of the two ELeVATE participants who completed the FE exam was still completing general education requirements and awaiting official acceptance into the engineering program at the University of Pittsburgh. Consequentially, the sample pool for the FE exam results was not



ideal for comparison. The average score for all six participants who took the FE exam was 48% with a standard deviation of 2.9. Considering the extraneous variables of disability and insufficient education leading to group inequality, the outcomes of the FE exam for the ELeVATE participants is satisfactory. Additionally, the FE exam that was utilized was a diagnostic version used to identify areas of strengths and weaknesses and will serve as a sufficient starting point for continued research in this area. It is possible that the exams completed by the ELeVATE participants can be used to further identify areas that can be enhanced throughout the program and within the math seminars offered.

The case studies each offer a holistic view of the development of self-awareness, self-efficacy, goal identification, and goal progression. There will not be one set path that all ELeVATE participants follow that lead to success. Rather, each individual will have their own unique set of obstacles, abilities, and goals that will encompass their transition. There will be varying degrees and definitions of success and achievement specific to each individual participant. The two case studies that were highlighted represent the variation and complexity that two different, but nonetheless, successful outcomes that can be experienced. Whereas one participant will accomplish a professional research paper and have the opportunity to present at a national conference another, equally as successful participant, will complete and submit a college application for the first time. Still, another may come to the realization that engineering is not a profession that is realistic or achievable and that is a success as well. If further rehabilitation is needed and becomes identifiable through the transition program, that too is integral to successful overall transition. Transition will have a different definition for each Veteran which contributes to the complexity as well as deserved attention to this topic.

Of important notice is the STEM focus in the ELeVATE program. The host institution of ELeVATE believes strongly in the natural linkage between military trained skills and correlated skills and interests required for successful outcomes in the STEM fields of study. Therefore, the intervention was applied to a population with this specific interest. The intervention was designed in respect to this orientation with supplemental program components geared towards STEM skill development. The specificity of focus is an advantage in regards to skill refinement and job attainment but also limits the sample pool for both participants and control subjects.

Cultural sensitivity is a relevant topic in disciplines of psychology and counseling. Not only does culture refer to ethnic origins and related norms and practices of geographical or national differences, but can refer to a minority within a modern, popular culture that adopts a unique worldview and distinctive values, beliefs, and convictions. It is of ethical responsibility and obligation for a practicing counselor to have knowledge of diverse cultural perspectives without holding bias or judgment (Sue, Arredondo, & McDavis, 1992). The military has been defined as a unique subculture within American civilian society with guiding principles to include: adherence to a chain of command (at the sacrifice of individual needs for the collective group needs), devotion to duty and mission, and emotional stoicism (Weiss, Coll, & Metal, 2011).

## **5.1 LIMITATIONS**

The variables that were analyzed (self-efficacy, engagement, goal orientation, etc.) were affected by interventions and treatment that took place within a larger, multicomponent program. The reported results assume that the impact was predominately associated with the rehabilitation

counseling component. However, there is an understanding that the ELeVATE program is comprised of several beneficial components that work synergistically with one another. It is difficult to accurately identify the specific intervention or program component that would be responsible for increased self-efficacy or increased level of engagement. Engineering competencies are honed in the math classes and workshops, professional development and goal orientation are refined in the professional seminars and career exposure trips, but all inputs are married and established within the rehabilitation and vocational counseling meetings. Despite the importance of the rehabilitation counseling meetings, the inputs are necessary for the work done in the meeting times.

As stated briefly before, the sample size of the study is small and presents limitations. The control group varies greatly in educational background and disability status. Ideally, both the experimental group and the control group would consist of Veterans with significant disabilities that are making the transition from the military to the world of postsecondary education for the first time. The leniency for the 2013 ELeVATE program cohort may have had an effect on the results by administering a treatment to a group that did not meet the criteria of need. Many of the 2013 ELeVATE participants were in their second, third, or fourth years of postsecondary education. Moreover, several participants had already reached a point of appropriate adjustment to their acquired disability or did not identify as a person with a disability.

Additionally, the data set is limited and availed post-test data only. There is no appropriate pre-test baseline in which to measure development of areas of interest such as self-efficacy and level of student engagement. There was qualitative data in the way of interviews with the rehabilitation counselor and focus group notes that were available, albeit limited, for the

experimental ELeVATE group. No such qualitative data equivalent existed for the control group.

A final limitation that can be identified is the use of the National Survey of Student Engagement. The NSSE is generally used for large colleges and universities to gauge the overall level of engagement of an entire school population. It is used to compare freshman students to senior students. It can also be used to compare other participating institutions to one another. The main purpose of the NSSE is to provide feedback to the institution to enhance their current practices. It is not intended to be used for individual assessment of engagement. Although the results obtained from the NSSE in this study were beneficial and insightful, the context of use does not support reliable outcomes in this study.

## **5.2 FUTURE RESEARCH**

Future studies in this area would benefit greatly from pre-test data collection. In this way, a clearer picture of development of skills and progression of personal development could be attained. It would also be advantageous to collect qualitative data from the control group in the way of interviews or hosting a focus group. This would give more weight to the case studies presented for the ELeVATE group in addition to providing additional comparison between groups.

As ELeVATE grows and similar programs are established, it would be valuable to conduct a longitudinal study that follows Veterans post-graduation and into employment. ELeVATE has the foundation in place to collect data for this type of research. Future research would benefit from looking at long-term effects of a transitional assistance program. There is

also potential to provide booster interventions or exposure to types of services provided in ELeVATE throughout the longitudinal data collection.

It would serve research of this type well to ensure appropriate disability diagnosis for eligibility to the program. It would increase the validity of the study and avail greater generalization to the wider population of Veterans with disabilities. As follows would be a wealth of valid and reliable best practices to provide to this deserving population.

Finally, a solution or remediation to the use of the NSSE could be the implementation of an alternative or more relevant assessment. Two assessments that would be worth considering for future research include: the Employability Maturity Interview (EMI) and the Motivation and Engagement Scale (MES). The EMI was created by Richard Roessler in 1987, and is a 10-item structured interview. Total time of completion is approximately 15-20 minutes plus time for scoring. The aim of this interview is to accurately assess readiness for vocational rehabilitation planning. The interview is also able to identify the need for further vocational exploration or necessity of employment services. Specific interests and vocational abilities are detectable in EMI results. The ten interview questions, answer sheets, instructional scoring manual, and scoring sheets are included in the assessment package (Arkansas Rehabilitation Research).

The MES uses a conceptual wheel model to assess four key areas of motivation and engagement (see Appendix H). The MES has multiple forms that can be used for grade school students, high school students, and college and university age students. The MES-University/College edition would be applicable for the use in future ELeVATE research. The MES-UC includes 44 questions, four questions for each eleven parts of the wheel. The Lifelong Achievement Group, which was founded in 1999, published this assessment. There have been multiple reliability and validity studies conducted on the MES that are available in literature.

The MES can be administered in classroom settings, in groups, or individually. Four major scores are calculated that include: positive thoughts (positive motivation), positive behaviors (positive engagement), negative thoughts (negative motivation), and negative behaviors (negative engagement). The Lifelong Achievement Group also published a complementary workbook that offers instruction presented in 11 modules of learning (Lifelong Achievement Group, 2012).

### **5.3 IMPLICATIONS FOR REHABILITATION COUNSELORS**

The profession of rehabilitation counseling finds its roots in service to military members. With the passage of the 1918 Soldiers Rehabilitation Act, the development of professionals providing vocational education intervention to Veterans with disabilities was established (Sporner, 2012). Rehabilitation counseling is a profession that offers both rehabilitation expertise and counseling knowledge to empower individuals with disabilities to reach vocational goals or goals of independent living. Although founded in military culture, the profession of rehabilitation counseling has vastly grown and now provides service to a myriad of populations that benefit from the same skill set. With the presence of compounding variables and barriers in today's generation of wounded, ill, and injured Veterans, rehabilitation counseling valuable and meets a crucial need for this population.

Rehabilitation counselors understand both the medical and societal implications of disabilities and possess a solid knowledge base of accommodations and assistive technology that would benefit Veterans with disabilities. Nonetheless, these attributes are only the surface of skills needed for rehabilitation counselors who wish to work with the Veteran population. One

must also possess a keen awareness of military culture, Veteran issues, and the economic and legal climates into which Veterans transition.

Not only do rehabilitation counselors need to have an understanding of the medical, emotional, mental, and cognitive repercussions of war in order to connect to the Veteran, they must have the ability to communicate and educate others on these topics as well. The percentage of Veterans with disabilities makes up a small portion of the general population and thus, their issues can go unrecognized to many. Advocacy is a key role for rehabilitation counselors, and it becomes intensified when dealing with the military members who served the country. Rehabilitation counselors must also be equipped with the knowledge of resources and references to provide to Veterans and their peers. The Department of Veterans Affairs is a comprehensive and complex network of services. A basic understanding of service allocation and referral information is essential in appropriately providing treatment to Veterans.

The therapeutic relationship between the counselor and the client is the best indicator of successful treatment outcomes. This has a unique meaning for rehabilitation counselors who work with the Veteran population. In order to establish a rapport and a working alliance with a Veteran client, a counselor must understand the language he or she uses. The military possesses a unique sub-language complete with slang, abbreviations, and jargon. Counselors do not need to learn every intricacy of military- speak, but a basic understanding of the language will enable connection and rapport building with the Veteran client.

Finally, it is vital for a rehabilitation counselor to possess knowledge of the world into which a Veteran is transitioning. This includes both the economic and legal realities that affect Veterans. Most Veterans will return to the civilian world and be in need of job. A basic understanding of common transferrable skills of military members will expedite the job search

process. Moreover, the ability to search and understand the labor market into which the Veteran is entering will foster successful transition. Legal concerns to be aware of can include incentive programs for employers to hire Veterans, tax credits, streamlined credentialing programs for Veterans, and preferred Veteran status for job openings. Knowledge of these areas will enable a faster and more successful transition and rehabilitation for Veterans today.

#### **5.4 CONCLUSION**

There is a profound need for transition assistance for Veterans with disabilities entering postsecondary education. There are both internal barriers and external barriers that act as obstacles in the retention and completion of education. Additionally, there is a growing rate of unemployment in the Veteran population that needs addressed. Transition assistance programs, like ELeVATE, can provide Veterans with the knowledge and skill set needed to reach degree achievement and subsequently career attainment. Established theoretical approaches, such as the social cognitive theory and principles of self-efficacy provide a solid foundation for this intervention.

The population of Veterans today reveals an unprecedented rate of service-connected disability. The injuries present as a result of the current conflict require specialized attention, and increased research in the areas of posttraumatic stress and traumatic brain injury. One must further consider the complex interplay of polytrauma disabilities and their impact on reaching goals and transitioning into civilian life.




Many Veterans will pursue postsecondary education upon return from military service. What was learned from this study is the value of a comprehensive transitional assistance program offered to Veterans with disabilities. The ELeVATE program offers academic preparation, rehabilitation counseling, and vocational and professional development opportunities for Veterans in postsecondary education. The accumulation of experiences within the ELeVATE program aims to increase self-efficacy and academic achievement. Despite statistical analyses not producing support of these hypotheses, the inferential and descriptive statistics offer progress in the right direction. This study provides a foundation on which to improve practices, methodology, and continue service provision to this deserving population.

## APPENDIX A

### ELEVATE FLYER

**EXPERIENTIAL LEARNING FOR VETERANS IN ASSISTIVE TECHNOLOGY AND ENGINEERING**



**UNIVERSITY OF PITTSBURGH**  
*Department of Rehabilitation Science and Technology  
School of Health and Rehabilitation Sciences*

**VETERANS  
WITH AND WITHOUT DISABILITIES:**

- Share your knowledge, skills, and a diverse experience to improve quality of life for other veterans and persons with disabilities
- Learn about engineering and assistive technology
- Join a research team and work on a real research project
- Visit state-of-the-art facilities
- Attend workshops and seminars on technical writing, math, and oral presentation skills
- Learn advanced machining skills
- Draft a scientific paper and create a poster to present at a conference
- Apply to undergraduate or graduate program

**ELIGIBLE PARTICIPANTS MUST**

- Be interested in research, engineering, and technology careers
- Be available to work 40 hours a week for 10 weeks
- Be interested in applying to college or university
- Preferably have a service-connected disability

**APPLY ONLINE AT**  
[www.qolt.pitt.edu/veterans](http://www.qolt.pitt.edu/veterans)

**QUESTIONS?**  
Contact Mary Goldberg at [mrh35@pitt.edu](mailto:mrh35@pitt.edu) or by phone at (412) 822-3693

## APPENDIX B

### CONTROL RECRUITMENT FLYER

# Seeking Student-Veterans to Participate in Research Study

*Participants should be in the STEM (Science, Technology,  
Engineering, Math) disciplines*

### **Participation includes:**

- 3 data collections within one academic year
- Completion of various assessments and surveys at data collections
- payment for each data collection (\$50, \$75, \$75)

Contact Mary Goldberg, [mrh35@pitt.edu](mailto:mrh35@pitt.edu) or Maria Milleville, [millvill@pitt.edu](mailto:millvill@pitt.edu) with any questions regarding this opportunity

Experiential Learning for Veterans In Assistive Technology And Engineering



University of Pittsburgh  
*Department of Rehabilitative Science and Technology  
School of Health and Rehabilitation Science*

**APPENDIX C**

**INCLUSION/EXCLUSION FORM**

Title: Experiential Learning for Veterans in Assistive Technology and Engineering

**IRB #:** PRO12090405

**Inclusion/Exclusion Criteria Form**

**Date:** \_\_\_\_/\_\_\_\_/\_\_\_\_

**Time:** \_\_\_\_\_ AM/PM (circle)

<b>Criteria</b>	<b>Criteria Met? (Y/N)</b>	<b>Comments</b>
Subject states his/her age is between 18 and 80 years.		
Subject reports to be a veteran.		
Subject reports to be a student majoring in STEM field.		
Subject reports willingness to complete instruments required by the study.		

**Eligible to participate?**     **YES**         **NO**

\_\_\_\_\_  
**Investigator signature**

## APPENDIX D

### GENERAL SELF-EFFICACY SCALE

#### Rating Scale:

1 = Not at all true 2 = Hardly true 3 = Moderately true 4 = Exactly true

#### Items:

1. I can always manage to solve difficult problems if I try hard enough.
2. If someone opposes me, I can find the means and ways to get what I want.
3. It is easy for me to stick to my aims and accomplish my goals.
4. I am confident that I could deal efficiently with unexpected events.
5. Thanks to my resourcefulness, I know how to handle unforeseen situations.
6. I can solve most problems if I invest the necessary effort.
7. I can remain calm when facing difficulties because I can rely on my coping abilities.
8. When I am confronted with a problem, I can usually find several solutions.
9. If I am in trouble, I can usually think of a solution.
10. I can usually handle whatever comes my way.

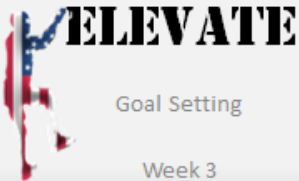
*(Schwarzer & Jerusalem, 1995)*

## APPENDIX E

### ELEVATE 10-WEEK SCHEDULE

<b>ELeVATE Schedule Summer 2013</b>	
<b>Week</b>	<b>Orientation</b>
<b>1</b>	
<b>Week</b>	- Individual meetings with rehabilitation counselor
<b>2</b>	- Friday AM Meeting: Overview of Topics <i>Guest Speaker: Pitt Vet Service Office</i>
<b>Week</b>	- Friday AM Meeting: Strengths Finder
<b>3</b>	<i>Guest Speaker: Pitt Vets (SVA Chapter), former ELeVATE</i>
<b>Week</b>	- Friday AM Meeting: Goal Setting
<b>4</b>	<i>Guest Speaker: VBA</i>
<b>Week</b>	- Individual meetings with rehabilitation counselor
<b>5</b>	- College Application/Personal Statement Workshop - Friday AM Meeting: Roadblocks in Goal Setting <i>Guest Speaker: OIF/OEF/OND Clinic</i>
<b>Week</b>	- Friday AM Meeting: Q&A with Dr. Cooper
<b>6</b>	
<b>Week</b>	- Field Trip to 911 <sup>th</sup> Air Lift Wing
<b>7</b>	- Friday AM Meeting: Stress <i>Guest Speaker: Veterans Leadership Program</i>
<b>Week</b>	- Google Resume Workshop
<b>8</b>	- Friday AM Meeting: Interviewing Questions and Stress Management
<b>Week</b>	- Field Trip to Wounded Warrior Project and Pitt Athletics
<b>9</b>	- Friday AM Meeting: Program Evaluation – <i>Susie, Open Minds</i>
<b>Week</b>	- Individual meetings with rehabilitation counselor
<b>10</b>	- Friday AM Meeting: Wrap Up and Review -Final Symposium

## E.1 GROUP MEETING CONTENT SAMPLE



**ELEVATE**  
Goal Setting  
Week 3  
Friday, June 21<sup>st</sup>, 2013

### Today's Schedule

- Warm-up Game
- Goal Setting discussion
- Break
- Guest Speakers *from the VBA*

### Project and Program Updates

- How's it going?
- Anything new to report? Progress? Obstacles?
- How are the Math and Writing seminars?



**GOAL SETTING**  
*"a goal properly set is halfway reached"*  
- Abraham Lincoln

### What, why, and how

- Most human behavior is goal-directed
- Oxford English Dictionary  
*"the object to which effort or ambition is directed; the destination of a (more or less laborious) journey"*
- Intended future state  
– An effort to reach it
- Not a prediction but a result of the effort

### The "why" of goal setting

- In groups, to make sure all efforts are towards same overall goal  
– Ensure that nothing is missed
- Identify ineffective actions
- Reduce anxiety
- More freedom of thought
- Provide motivation and accountability
- Easier communication with others

## 5 Steps to Setting Goals

1. Important to you
2. Stated positively
3. Specifically stated
4. Under your control
5. Reachable and realistic



## Questions to consider...

- Is it stated positively? Can you picture your goal?
- Have you used words such as "not" "stop" "avoid" or "don't"
- Will you know when your goal has been reached
  - what will you notice
- Have you used words like "more" "less" or "better" that make your goal statement not specific
- If the goal weren't important to others, would it still be important to you
- Are you responsible for reaching your goal
- Do you need others to help? Are they on board?

## Brainstorm & Assess Commitment

1.....2.....3.....4.....5.....6.....7.....8.....9.....10  
Not very willing very willing

## Developing a plan

- Building a Goal Ladder
  - Write down your goal. Make sure your goal is *positive, specific, important to you, and under your control.*
  - List everything you must do to reach your goal.
    - Write each thing the same way you write a goal: make each step positive, specific, important to you, and under your control
  - Place the things in the order you expect to achieve them.
  - Write down a target date when you expect to complete the step
  - As you move up the ladder, be sure to occasionally look down to see how much you have accomplished!



## E.2 SUPPLEMENTAL WORKSHOP CONTENT SAMPLE



### Why go to college

- A college graduate will earn an average of \$368 more a week than a high school graduate – that's \$20,000 more a year.
- A college degree increases your chances of employment by nearly 50%.
- A college degree will continue to grow in value.
  - in 10 years there will be an estimated 19 million more jobs for educated workers than there are qualified people to fill them
- You'll be more likely to live the way you've always dreamed.
  - Education is linked to a higher standard of living

**Median incomes**

- Male, high school diploma only: \$32,000
- Male, bachelor's degree: \$55,000

### Tips for Veterans

- Take the CLEP
  - College Level Examination Program
  - Series of exams to test knowledge learned through military experience
  - Cost of a CLEP exam is fractional compared to the cost of tuition and fees
  - Could assist in skipping general introductory courses, general education classes or could even demonstrate your ability in a foreign language
- University of Pittsburgh
  - Address: 5th Avenue & Bigelow Blvd. G35 CL
  - Phone: (412) 624-7012

### The "Perfect" Essay Is the Wrong Essay

"The purpose of the essay is to help the admissions committee fully understand the potential difference you can make in the class and how your background and experience will move the campus community forward."

*Douglas Christiansen, vice provost for enrollment and dean of admissions, Vanderbilt University*

### Personal statement

- Don't over think it
- Write what you know
- What is important and meaningful to you
- Keep it brief – try to limit to 500 words
- Use your own language
- Avoid trying to include a statement like, "and that's why I want to go to \_\_\_\_\_ College."
- Proof read and/or have a stranger critique it

### Apply to Pitt

University of Pittsburgh  
ADMISSIONS & FINANCIAL AID  
Application for Admission

Application for Admission

Personal Data

Required fields are marked with \*

Social Security Number

Please enter your Social Security Number (SSN) here if you plan to complete a Free Application for Federal Student Aid (FAFSA) in order to be considered for financial aid. This field is optional, but if you do not complete it, the processing of your financial aid application may be delayed. Your SSN will be kept secure and you will be assigned a University of Pittsburgh student number for all other purposes.

## APPENDIX F

### INSTRUCTIONAL LETTER FOR SURVEY COMPLETION

Dear <NAME>:

Thank you for participating in the Experiential Learning for Veterans in Assistive Technology and Engineering study. The data we collect in this study will help gauge the effectiveness of the veteran transition program offered in the Department of Rehabilitation Science and Technology at the University of Pittsburgh.

At this time, you have met with a research assistant, received detailed information about the study, and signed a consent form. At this time, we invite you to complete the first round of surveys and questionnaires.

Specifically, you will be asked to answer questions pertaining to your demographic information, complete the ELeVATE program questionnaire, complete the National Survey on Student Engagement, the General Self-Efficacy Scale, and the Veteran Services Utilization Questionnaire. The link provided will take you to the surveys. At the end of each survey, you will be automatically redirected to the next one. If the survey synchronization is faulty, you can copy and paste the separate links below to access the next survey.

Please note that you are required to complete the surveys in one sitting. You will not be able to go back, revise your answers, or access the surveys at another time. For that reason, we ask you to allow 60-90 minutes for completion of all surveys.

If you are majoring in engineering or in a pre-engineering track, you will complete one additional test – the Fundamentals of Engineering Exam. You will access the test via a separate link. It will take approximately 75 minutes to complete.

**The deadline to complete the surveys and questionnaires is 11:59 PM on Friday, November 22<sup>nd</sup>.**

Upon completion of the questionnaires and surveys, you should expect to receive your compensation approximately within 5 business days via a We-Pay card. You will need to contact Annmarie Kelleher to activate your card - (412) 822-3681. As described

in the consent “you will be paid \$50.00, \$75.00, and \$75.00 respectively at the first, second, and third data collection time-points.”

Please note that this is the first of three data collection points in this research study. We will be contacting you with a request to complete the surveys and questionnaires again in April 2014 and in November 2014.

We appreciate your participation. Please contact us with any questions.

Thank you for your service,

*-Experiential Learning for Veterans in Assistive Technology and Engineering Study  
Research Team*

## APPENDIX G

### ADDITIONAL TABLES

Table 12: NSSE Engagement Indicators and Themes

	<i>NSSE Theme: Academic Challenge</i>
1	Higher-Order Thinking (HO)
2	Reflective and Integrative Learning (RI)
3	Learning Strategies (LS)
4	Quantitative Reasoning (QR)
	<i>NSSE Theme: Learning with Peers</i>
5	Collaborative Learning (CL)
6	Discussions with Diverse Others (DD)
	<i>NSSE Theme: Experience with Faculty</i>
7	Student-Faculty Interaction (SF)
8	Effective Teaching Practices (ET)
	<i>NSSE Theme: Campus Environment</i>
9	Quality of Interactions (QI)
10	Supportive Environment (SE)

Table 13: NSSE Student-Faculty Interaction Indicator Scores

<i>Engagement Indicator</i>	<i>Student-Faculty Interaction</i>			
	a	b	c	d
ELeVATE	2.3	2.6	2	1.6
Non-ELeVATE	2.5	2.8	2.6	3.2

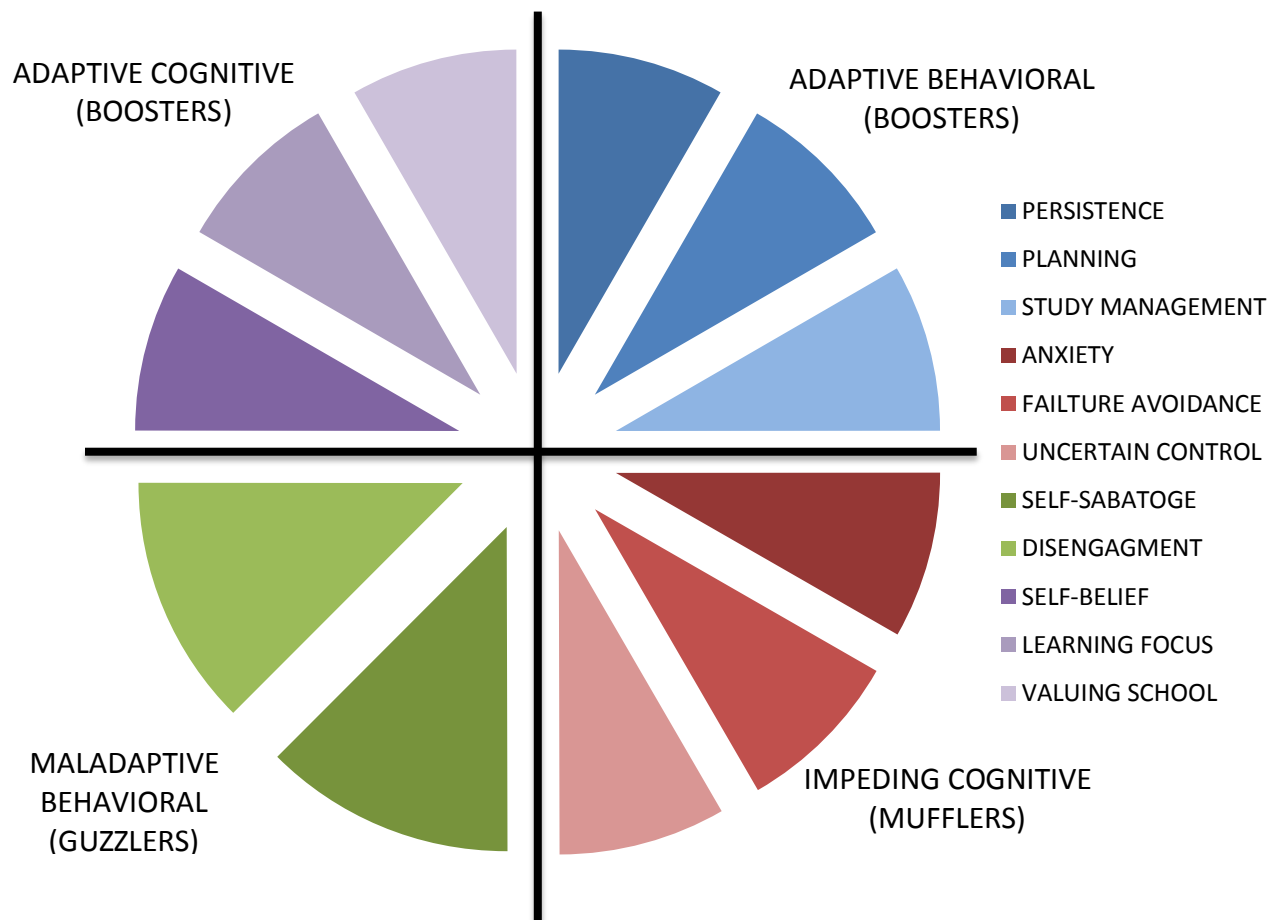
Table 14: NSSE Effective Teaching Practices Indicator Scores

<i>Engagement Indicator</i>	<i>Effective Teaching Practices</i>				
	a	b	c	d	e
ELeVATE	2	1.6	2	2.6	2.3
Non-ELeVATE	2.1	1.7	1.7	2	2.6

## APPENDIX H

### MOTIVATION AND ENGAGEMENT SCALE CONCEPTUAL WHEEL

*Adapted from Martin (2008)*



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